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PALM BEACH COUNTY, FLORIDA

AIR POLLUTION CONTROL PROGRAM

ANNUAL PROGRESS REPORT
1973

PALM BEACH COUNTY HEALTH DEPARTMENT

For Reference
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I

INTRODUCTION

Continuous rapid growth has been recorded in Palm Beach County for the past 50 years. At the present rate of growth the population should reach approximately 800, 000 by the year 1980, almost twice that of the lastest Area Planning Board census. It is interesting to note that 90% of the County's population lies within a narrow area adjacent to the east coast. The other 10% lies mainly adjacent to Lake Okeechobee in the western part of the County.

Tourism and related fields continue to be major factors in the economy of the area. Tourism has increased along with the increased population. A good indication of this fact is the number of passenger arrivals recorded at Palm Beach International Airport. In 1973, 650,151 passengers deplaned as compared to 543,457 in 1972, an increase of approximately 20%. Other major industries in the County continue to be building construction and related materials, agriculture, aircraft engines, and the service industries.

In order to keep abreast of the environmental protection needs related to the widespread county growth a variety of activities have been established by the local air pollution program in the last twelve (12) months.

The activities are characteristic of urban areas across the nation. Among the many activities our program anticipates is the administering of the state permit system. The Department of Pollution Control requires both a permit to construct and a permit to operate any air pollution source. As administrants of the permitting system the local program will now be in a position to prevent the improper construction of a pollution source and to assure that adequate pollution control equipment is utilized.

The air quality monitoring capabilities continued to be broadened with the purchase of more modern sulfur dioxides, ozone, and oxides of nitrogen sampling equipment installed in the program's air monitoring laboratory. A second complete continuous monitoring meteorological system (wind direction, wind speed, temperature, relative humidity) is now operational in the program's mobile air monitoring van. In addition, the program now continuously measures the frequency and intensity of temperature inversions using temperature radiation shields installed on a 100 foot tower.

An air pollution index, consisting of the lastest level of both ozone and suspended particulate matter and the precent of the standard level of each is disseminated through a local TV station and news media everyday.

In conclusion, efforts on the National, State and local levels in bringing the problem of overall pollution abatement to the public eye have been continually generated.

TABLE I
PALM BEACH COUNTY, FLORIDA
POPULATION

	A.P.B.	U. OF FLA DIVISION OF POPULATION STUDIES (ESTIMATES)	
	4-1-71	1972	1973
Atlantis	464	724	844
Belle Glade	16,114	17,105	17,077
Boca Raton	30,638	37,590	38,874
Boynton Beach	19,646	24,091	26,507
Briny Breeze	481	918	689
Cloud Lake	136	136	136
Delray Beach	19,842	23,722	25,046
Glen Ridge	216	216	233
Golf Village	51	52	54
Golfview	203	198	207
Greenacres City	1,792	2,884	2,949
Gulf Stream	440	455	474
Haverhill	1,043	1,078	1,081
Highland Beach	1,000	1,358	1,406
Hypoluxo	345	342	354
Juno Beach	751	850	883
Jupiter	3,454	4,624	5,358
Jupiter Inlet Colony	407	432	448
Lake Clarke Shores	2,398	2,565	2,694
Lake Park	7,108	7,470	7,927
Lake Worth	24,494	25,179	25,934
Lantana	7,324	7,357	7,826
Manalapan	210	226	235
Mangonia Park	827	862	885
North Palm Beach	9,959	10,923	12,056
Ocean Ridge	1,094	1,139	1,155
Pahokee	5,762	5,093	5,944
Palm Beach	9,287	10,040	9,742
Palm Beach Gardens	6,614	7,620	8,315
Palm Beach Shores	1,217	1,526	1,419
Palm Springs	4,490	5,550	6,288
Riviera Beach	21,684	23,663	25,164
Royal Palm Beach	491	1,080	1,621
South Bay	2,995	3,050	3,026
South Palm Beach	190	318	367
Tequesta Village	2,916	3,655	3,798
West Palm Beach	57,613	59,293	61,663
Total Incorporated Area	263,873	293,342	308,679
Unincorporated	96,136	95,268	119,304
TOTAL	360,009	388,610	427,983

II

METEOROLOGY

GENERAL

Topography is of primary importance whenever the meteorological aspects of a given region are to be evaluated. Palm Beach County is a fairly level region. For the most part, Palm Beach County is between 10 and 20 feet above sea level. All urban development is located along the eastern 10 miles of the coastal strip. Most of the western portions of the County are covered by agricultural lands or everglades. The agricultural lands are endowed with a rich peat-like "muck" soil. The Atlantic ocean borders the eastern edge of the County and the Gulf Stream flows northward approximately 3 miles off-shore. Seldom does a cold air mass reach this region without being modified, due to marine influences and our southern location. Light freezes occur infrequently along the coastal areas of the County and more frequently in the everglades and agricultural areas. The most eastern parts of the County come under the influence of the sea breeze during the day and land breeze during the night. Based on weather data accumulated at Palm Beach International Airport for the past 29 years, August is the warmest month with a mean of 83° F, a maximum mean of 91.1° F, and minimum mean of 74.8° F.

From the same data, January is the coldest month with a mean of 66.9° F, a maximum mean of 75.5° F and a minimum mean of 58.3° F. Rainshowers and/or thunderstorms of short duration are frequent during the summer season. Palm Beach County receives the greatest amount of rainfall during the summer and fall. As indicated in table 2, in the past 29 years of record the County received approximately 61.7 inches of rain per year.

Palm Beach County can be classified as a semi-tropical region. The quasi-permanent location of the "Bermuda" high pressure area governs our weather. It causes our prevailing easterly surface winds in addition to suppling the warm moist air necessary to produce the frequent air mass, frontal or nocturnal rainshowers and/or thunderstorms that occur in the County. The position of the "Bermuda" high pressure area is also conducive to the formation of an atmosphere capable of causing high pollution days. This atmosphere can easily occur if cold air from the north moves underneath the warm moist air brought into the County by the "Bermuda" high. The result is a temperature inversion or increase of temperature with height which traps the pollutants in the lower levels.

Meteorological parameters play a significant role in understanding the over-all air pollution cycle. The motions of the atmosphere are extremely variable and must be thoroughly examined in order to determine the movement and dispersement of pollutants.

WIND

Both wind direction and wind speed are of primary importance. The surface wind and the wind found in the first few hundred feet of our atmosphere must be studied to determine diffusion and movement of the pollutants. The wind direction is indicative of the direction of travel of the pollutants. The wind speed determines the time it takes the pollutants to travel to a receptor and the amount of dilution of the pollutant is also a function of the speed. Light winds, coupled with other factors, contribute to poor air quality episodes. U. S. Weather Service records for Palm Beach International Airport show the prevailing wind directions for the months of February through November are from one of the easterly headings. Mean monthly speeds vary between 7.4 knots in August and 10.8 knots in April (Table 2). The wind direction and speed for the year 1973 (Table 3) shows that a higher percentage of winds were from the east or east southeast directions and the majority of the wind speeds were in the 7-10 knot category.

TABLE 2
MEANS AND EXTREMES
PALM BEACH COUNTY AIRPORT (1931 - 1960)

MONTH	MEAN MAXIMUM TEMPERATURE	MEAN MINIMUM TEMPERATURE	MEAN MONTHLY TEMPERATURE	MEAN MONTHLY PRECIP. (IN.)	PREVAILING WIND DIRECTION	MEAN WIND SPEED
JANUARY	75.5	58.3	66.9	2.48	NW	10.0
FEBRUARY	76.5	58.6	67.6	2.35	SE	10.4
MARCH	78.6	61.1	69.9	3.44	SE	10.7
APRIL	82.4	65.4	73.9	4.34	E	10.8
MAY	85.9	69.2	77.6	5.11	ESE	9.6
JUNE	89.2	72.7	81.0	7.53	ESE	8.0
JULY	90.8	74.3	82.6	6.66	ESE	7.5
AUGUST	91.1	74.8	83.0	6.74	ESE	7.4
SEPTEMBER	89.7	74.5	82.1	9.66	ENE	8.8
OCTOBER	85.2	71.1	78.2	7.96	ENE	10.0
NOVEMBER	80.2	64.8	72.5	2.86	ENE	9.9
DECEMBER	76.9	59.4	68.2	2.57	NNW	9.7
YEAR	83.5	67.0	75.3	61.7	ESE	9.4

TABLE 3
PALM BEACH INTERNATIONAL AIRPORT (P.B.I.A.)
WIND DIRECTION AND SPEED (KNOTS) OCCURRENCES - YEAR 1973

DIRECTION	1-3	4-6	7-10	11-16	17-21	22-27	TOTAL	PERCENT
35-36-01 (N)	10	23	22	17	2	0	74	2.5
02-03-04 (NNE)	3	8	24	40	13	1	89	3.0
05-06-07 (ENE)	3	35	97	128	26	0	289	9.9
08-09-10 (E)	3	58	184	163	24	2	434	14.9
11-12-13 (ESE)	9	103	188	139	15	2	456	15.7
14-15-16 (SSE)	9	63	76	78	12	1	239	8.2
17-18-19 (S)	22	93	53	21	2		191	6.5
20-21-22 (SSW)	13	46	33	18	8		118	4.1
23-24-25 (WSW)	12	92	34	13	2		153	5.2
26-27-28 (W)	23	62	28	19	4	2	138	4.7
29-30-31 (WNW)	15	79	103	58	5		260	8.9
32-33-34 (NNW)	14	58	78	37	1	2	190	6.5
CALM	289						289	9.9
TOTAL	425	720	920	731	114	10	2920	
PERCENT	14.6	24.6	31.5	25.1	3.9	0.3		100.0

Multiply by 1.15
to obtain M.P.H.

ATMOSPHERIC STABILITY

The dilution of pollutants in the atmosphere depends greatly on the vertical temperature gradient in the first few hundred feet of the atmosphere. When the vertical temperature gradient decreases with height the atmosphere is unstable and good dilution of pollutants is the result. This normally occurs in Palm Beach County during the summer season and/or the warmer hours of each day. If the vertical temperature gradient increases with height within the first few hundred feet of the atmosphere, a stable condition is caused, often called an inversion, which results in poor dilution of pollutants. This occurs in Palm Beach County more frequently during the winter and fall seasons and/or the cooler hours of each day. If pollutants are present during these periods they are trapped beneath the inversion and remain there until the inversion is dissipated by surface heating.

The U. S. Weather Service at Palm Beach International Airport can not measure the vertical temperature gradient in our region with their present equipment. We therefore rely upon the rawinsonde (measuring device) data taken at Miami and Tampa. Interpolation procedures are necessary in order to determine stability conditions in Palm Beach County. Table 4 shows Miami and Tampa taken from C. R Hosler's report entitled, "Low Level Inversion Frequency in the Contiguous United States" (1961).

TABLE 4

Percent Frequency of Occurrence of Inversions with Base Less than 500 Feet Above Station Elevation

	MIAMI				TAMPA			
TIME (EST)	1900	2200	0700	1000	1900	2200	0700	1000
FALL	19	41	73	3	25	63	76	2
WINTER	29	39	60	6	28	69	60	17
SPRING	10	27	47	2	7	59	52	1
SUMMER	21	27	65	2	14	62	57	8

Based on the percentages shown in the above table it is reasonable to assume that inversions with a base less than 500 feet occur in Palm Beach County during the fall and winter seasons between the hours of 2000 (8:00 P.M.) and 0800 (8:00 A.M.) 50% of the time. The inversion frequency percentages for the spring and summer seasons during the same time frame are also substantial and should not be overlooked in the course of a pollution study. At this time it is interesting to note two important thoughts: (1) Hosler only considered very shallow inversions (less than 500 feet), yet inversions with higher bases are also capable of causing poor air quality; (2) the interior areas of Palm Beach County experience lower night time temperatures and therefore must have a higher frequency of inversions from 2000 through 0800 each day, especially during the fall and winter seasons.

C. R. Hosler's report was strengthened by Mr. Harold P. Gerris of the Meteorology Department of the University of Miami who conducted a thorough study and prepared a paper entitled, "Analysis of Low-Level Temperatue Inversions in the Miami Area Using Instrumented Towers". He placed two instrumented towers in the Miami Area, one on the coast and the other 16 miles inland. The analysis of the temperature data revealed that nocturnal inversions occurred almost every night within 200 feet of the ground. The inversions that occurred inland were 3-4 times stronger than those that occurred on the coast. The inversions lasted approximately 10 hours inland. He showed that the inversions formed shortly after sunset and dissipated shorly after sunrise. The sampling period began on February 17, 1971, and lasted until May 27, 1971.

MIXING HEIGHTS

The mixing height or depth is defined as the height above the surface through which vertical mixing takes place. The mixing height value depends on the local stability of the atmosphere and the surface temperature. The greatest mixing height values occur during the summer season and warmer hours of the day. The minimum mixing height values occur during the winter season and cooler hours of the day. Mixing heights are a function of atmospheric stability. The greater the mixing height the greater amount of air available to dilute a pollutant.

Table 5 shows mixing height data for Palm Beach County, Miami, and Tampa taken from G. C. Holworth's Report entitled, "Mixing Heights, Wind Speeds and Potential for Urban Air Pollution Throughout the Contiguous United States". (1971)

TABLE 5

SEASONAL MEAN MIXING HEIGHTS IN FEET ABOVE GROUND ELEVATION FOR MORNING HOURS AND AFTERNOON HOURS.
(DAYS WITH NO PRECIPIATION)

	PBC (INTERPOLATION)		MIAMI		TAMPA	
	Mrn.	Aft.	Mrn.	Aft.	Mrn.	Aft.
FALL	2640	4290	2877	4339	1382	4623
WINTER	2310	3960	2158	3986	1300	3471
SPRING	3052	4620	3125	4752	1659	5025
SUMMER	3382	4290	3435	4488	2164	4818
ANNUAL	2846	4267	2897	4389	1626	4484

The values in the above table clearly show that on the average, the greatest volume of air for the mixing of pollutants is available during the afternoon hours. The fall and winter seasons experience the least volume of air available for mixing, especially during the morning hours and therefore are subject to a greater potential for poor air quality.

CONCLUSION

Recently, the Air Pollution Section of the Palm Beach County Health Department was allowed to install **temperature radiation** shields on the Division of Forestry Observation tower at Loxahatchee, Florida. The shields were placed at the 25 foot, 50 foot, and 100 foot levels. The equipment continuously collects data in order to monitor the frequency and strength of low level inversions and mixing heights. The data collected thus far verifies the existence of frequent low level inversions and shallow mixing heights during evening and early morning hours.

Meteorological parameters during the spring and summer seasons in Palm Beach County are more favorable for good air quality than the fall or winter seasons. The fall and winter season experience a higher frequency of inversions (stable air), less rain fall (cleaning agent) and more shallow mixing heights (small volume of air for dilution), all of which hinder the diffusion of pollutants.

As time goes on and more of the aforementioned meteorological studies become available, it will become increasingly evident that serious nocturnal inversions exist. Good planning, therefore, will be mandatory prior to the construction of any industrial complexes in order to curtail future pollution problems.

III

COMPLAINTS & INVESTIGATIONS

During the period January 1, 1973 through December 31, 1973, a total of 174 complaints dealing with air pollution and noise pollution were received and investigated by this office. These complaints can be classified as follows:

1.	Industrial Fumes or Dust	33
2.	Commercial Incinerators	6
3.	Open Burning	74
4.	Internal Combustion Engines Fumes and Exhaust	10
5.	Food Establishment Odors	3
6.	Pollen Deposits	7
7.	Construction Dust and Fumes	7
8.	Noise	14
9.	Unknown Sources	4
10.	Miscellaneous Sources	16
	TOTAL	174

In the open burning category, only 49% as many complaints were received during this reporting period as compared to the previous period. This can be attributed to better communication and cooperation with the land clearing contractors, agricultural interests, and local fire departments. Open burning complaints break down as follows: dumps 10, land clearing 34, agricultural and others 30.

Incinerator complaints remain low during the reporting period due to the small number that are still operational in Palm Beach County. Most of the complaints classified as miscellaneous resulted from low water in drainage canals where weeds that are normally submerged were exposed to the air and gave off an offensive odor when they decayed. There has been a definite increase in noise complaints since our last report. Noise is a form of pollution and complaints are investigated by this office. It is hoped that new legislation will be enacted in order to eliminate excessive noise pollution. The increasing number of complaints in the areas of industrial activity fumes and dust, and internal combustion engines fumes and dust are a result of both increasing activity and increasing population density.

A new investigation category not reported in this section in prior years is "Open Burning Authorization Investigations". In pursuing this type of investigation, one hundred eleven (111) requests for authorization to conduct open burning operations, were answered. Of these one hundred eleven requests, ninety (90) were authorized to burn and twenty-one (21) were denied. The denials in most cases were for not being able to comply with Chapter 17-5; in all other instances denials were due to atmospheric conditions at the time of the request.

IV

TRAINING

1. Mr. Frank J. Gargiulo attended Environmental Protection Agency workshop, "Federal Grants", in Atlanta, Georgia, March 23, 1973.
2. Mr. Eugene J. Sacco attended Environmental Protection Agency, Air Pollution Training short course, "Visible Emissions Evaluation", in Dania, Florida on March 28, 1973.
3. Mr. Louis J. Devillon attended Environmental Protection Agency workshop, "National Emissions Data System", in Orlando, Florida on June 22, 1973.
4. Mr. Louis J. Devillon and Mr. Robert E. Milkins attended Environmental Protection Agency Course #439, "Visible Emissions Evaluation", at Orlando, Florida on June 25 - June 28, 1973.
5. Mr. Frank J. Gargiulo attended Department of Pollution Control workshop, "Emergency Action Plan", at Fort Lauderdale on July 26, 1973.
6. Mr. Frank J. Gargiulo attended Environmental Protection Agency workshop, "Grants" at Tallahassee on August 16, 1973.
7. Mr. Robert E. Milkins, Mr. George Camejo, and Mr. Louis J. Devillon took the taped Environmental Protection Agency Course #422-A, "Air Pollution Control Orientation", during August, 1973.

8. Mr. Louis J. Devillon attended Department of Pollution Control workshop, "State Permits", at Orlando, Florida on September 7, 1973.
9. Mr. Dennis O. Myers attended McMillan Electronic Corporation, Instrument Course, at Houston, Texas, on October 22 - October 26, 1973.
10. Mr. Eugene J. Sacco attended Department of Pollution Control workshop, "Complex Sources", at Fort Lauderdale on November 30, 1973.
11. Mr. Dennis O. Myers and Mr. Eugene J. Sacco attended Department of Pollution Control workshop, "Stack Sampling and Complex Sources", in Fort Lauderdale on November 30, 1973.

V

EQUIPMENT ACQUISITION

The major items purchased during the report period are as follows:

1. One (1) Ozone Meter
2. One (1) Ozone Generator
3. One (1) Nitric Oxide - Oxides of Nitrogen Meter
4. One (1) Sulfur Dioxide Analyzer
5. One (1) Dynamic Calibration System
6. Three (3) Strip Chart Recorders
7. One (1) Water Distilling Apparatus
8. One (1) Muffle Furnace
9. One (1) Six-point Temperature Recorder
10. One (1) Aspirated Radiation Shield
11. A meteorological monitoring station, that includes sensors and recorders for wind direction, wind speed, temperature, and relative humidity.

VI

PUBLIC RELATIONS

During this report period the local air pollution program made substantial efforts to convince the public that the air pollution problem is a complex one. The effects of modern trends in industry and transportation together with population growth and concentration, in south Florida, can turn air pollution into a far more complicated and serious problem than ever before. Citizen groups and local officials have been requested to lend their support to the Florida Air Implementation Plan. The fact that controlling air pollution now with proper control equipment will be less expensive than not controlling it has been highlighted whenever possible. The local air pollution program is acutely aware that only proper planning today, such as the location of industrial activities and other large establishments, can assure good air quality in south Florida tomorrow. It has been brought out that the fundamental objective of any air pollution program is to maintain reasonable air quality standards in order to protect the health and welfare of the citizens at large.

Certain aspects of the Palm Beach County Air Pollution Program were frequently transmitted to the public through the use of the news media.

Twice each day a "Pollution Index" is prepared and given to the local newspapers and a television station for daily transmission. The index consists of the latest particulate matter and ozone concentrations and the percent of the air quality standard those levels represent.

Some of the more significant activities that personnel of the air pollution program have participated in are as follows:

1. Mrs. L. M. Field appeared on a local television program to explain the various functions of the County air pollution program.
2. Mr. Eugene J. Sacco attended the annual Air Pollution Control Association meeting in Chicago, Illinois on June 24 - 28, 1973.
3. Both Mrs. L. M. Field and Mr. Eugene J. Sacco attended American Lung Association meetings in an advisory capacity.
4. Staff personnel continually assist, guide, and provide necessary data to school children for their environmental studies.
5. Staff personnel have appeared periodically before the Palm Beach County Board of County Commissioners in order to achieve certain objectives.
6. Mr. Eugene J. Sacco attended the annual meeting of the Florida Section of the Air Pollution Control Association in Jacksonville, Florida

on September 29 - October 1, 1973.

7. During the latter part of this report period steps were taken to appoint a person from our local program to sit as a voting member on the Technical Coordinating Committee of the West Palm Beach Urban Area Transportation Study.

VII

SURVEILLANCE & ENFORCEMENT

The Department of Pollution Control and the Palm Beach County Health Department entered into a contract agreement during this period in order to maintain and expand the level of air pollution control work performed in the County with a minimum of expense and duplication of effort and facilities. The agreement enables the Department and County to more readily fulfill and enforce provisions described in the State Air Implementation Plan.

In order to assure that our local air pollution program remains effective with regard to the provisions of the State Air Implementation Plan specific responsiblilites, functions, and activities have been identified and listed in accordance with their priorities.

The Palm Beach County Environmental Control Board adopted an amendment to Resolution # R-73-665 accepting the responsibility for reviewing permit applications pursuant to Florida Statute 403.182(2) and 17-4.07(4) of the rules of the Department of Pollution Control. The action will give the local air pollution program a first-hand review of all applications for permits to construct, operate, modify, or expand any installation, structure, equipment, or facility which is expected to be an air pollution source. The air pollution section will only recommend approval of such applications when it determines that the installation is properly equipped with pollution control devices designed in accordance with the best available technology. The control devices must abate or prevent pollution to the degree that will comply with the standards set forth in appropriate laws, rules, or regulations promulgated by the Department or County. The amendment is a major step towards solving current and future air pollution problems within the political boundaries of Palm Beach County.

During this period an amendment to Florida's Air Implementation Plan was orginated in response to Federal Register, Vol. 38, No. 116, dated June 18, 1973, which deals with the control of complex air pollution sources. The amendment to the State Air Implementation Plan generated an amendment to Department Rule, Chapter 17-2, "Air Pollution", Florida Administrative Code. Paragraph 17-2.04(8), Complex Sources, was added to the rule. The rule states that after December 15, 1973, no person shall commence construction or modification of any complex source without a permit from the Department, or other governmental agency authorized by the Department to issue such a permit. The amendment is designed primarily for the control of carbon monoxide emissions. Some examples of complex sources usually associated with large parking lots (1500 cars of more) which are to be regulated follows: Shopping Centers

Hotels

Amusement, Recreation Centers
Sports Centers, Arenas
Racetracks, Frontons
Condominiums
Airports

In addition, any new road or modification of a road in Palm Beach County designed to accommodate 1000 vehicles per hour or more at peak traffic times will be considered a complex source and must obtain a permit from the Department. Any organization or person seeking a complex source permit must submit information (air quality impact statement) to show that ambient air quality standards will not be violated. The amendment is another major and far reaching step to curtail future air pollution problems.

On December 19, 1973, an amendment to the Environmental Control Act, Chapter 70-862, that provided for either an engineer or attorney, duly licensed in the State of Florida, to qualify as the Environmental Control Officer, was approved by the Legislative Delegation at the Delegation hearing. In the past it was mandatory that the Environmental Control Officer be an engineer. The amendment to Chapter 70-862 will allow an attorney to be appointed to the position. The local air pollution program feels it more appropriate for an attorney to act as the Environmental Control Officer (ECO) for obvious reasons. The ECO must enforce the provisions of the Environmental Con-Act.

He must present alleged violations of Pollution Control laws to the Environmental Control Hearing Board. Proper presentation techniques require a thorough knowledge of legal procedures. Plans are underway to employ an attorney as the E.C.O. When the individual becomes available a significant advance will have been accomplished in our local pollution control program's enforcement arm.

A significant change implemented by the Department of Pollution Control during this period was the transfer of all sugar industry administrative tasks from the Southeast Regional office to the Southwest Regional office. The change served two purposes. One was to more equally distribute the air pollution workload; the other was to have one Regional office administer all sugar industry related matters. Seven (7) of the nine (9) sugar mills operating in south Florida are located in Palm Beach County, and approximately ninety percent (90%) of all sugarcane grown in south Florida is located in Palm Beach County which is a part of the Department's Southeast region. Our agency therefore, has always maintained a strong working arrangement with the Southeast Regional office providing technical and administrative assistance regarding sugar industry matters. Because of our previous experience with the sugar industry the Department has requested that we continue to provide the Southwest

Regional office with technical and administrative assistance. Our program has welcomed the opportunity to do this due to our knowledge of the industry, our involvement in ambient air quality monitoring in the area, our close proximity to the sources, and our present air and ground surveillance of the same.

This agency continued a ground and aerial surveillance program throughout the past year, in order to monitor compliance of Air Pollution rules. The majority of aerial surveillance missions were flown during the winter season, the period of the year when open burning operations by both agricultural and land clearing interests are at their peak. Because of the sharp decline in open burning violations, aerial surveillance missions were reduced during this reporting period. The ground surveillance program continued throughout the year in accordance with established procedures. Listed air pollution sources were observed by representatives of this office on a routine basis. Also, the inspectors were continually on the alert for new and/or unpermitted sources. In addition, the inspectors were able to observe and investigate violations of other Air Pollution regulations, such as unauthorized open burning. Most air pollution sources in Palm Beach County are now aware of the scope of the Air Pollution Regulations which affect their operations, and are making a greater effort to operate within the limits of said regulations. This is reflected by the decline in the number of abative action cases that were necessary during the report period.

Formal enforcement actions which this agency initiated during this report period include:

1. Formal notice of violation of Chapter 17-4, paragraph 17-4.10(3)(b) and 17-2.04(3) was served on Eastern Cement Corporation on March 29, 1973. The violation cited concerned fugitive particulate from a cement transfer and storage operation.
2. Formal notice of violation of Chapter 17-5, paragraph 17-5.07(1)(a) was served on Leadership Housing, Inc. on August , 1973. The violation cited concerned open burning of land clearing debris at a time other than the prescribed hours.
3. The (10) formal notices of violation of Chapter 17-5 F.A.C. were forwarded to the State of Florida, Department of Pollution Control for appropriate legal action.

In addition, thirty-six (36) informal notices of violations were issued. Of these, twenty-five (25) were violations of Chapter 17-5 and eleven (11) were violations of Chapter 17-2.

VIII

ENGINEERING EVALUATIONS

Many engineering evaluations were conducted during this report period. A brief description of some that were reviewed with specific recommendations sent to the Department of Pollution Control follows:

1. An application for a permit to operate Eastern Cement Corporation's activity at the Port of Palm Beach in Riviera Beach. Shipboard and truckloading pollution control devices were evaluated.

2. An application for a permit to construct Snow Concrete Corporation's concrete batching plant in Delray Beach.

3. A review of Florida Power and Light Company's plans to construct a fossil fuel steam electric power generating plant in Martin County and what impact the plan would have on the Ambient Air Quality of Palm Beach County.

4. An application for a permit to operate boilers at the Glades County Sugar Growers Cooperative Association.

5. A re-evaluation of the impingement type scrubber in parallel at boiler #2 at the Clewiston Mill of the United States Sugar Corporation.

6. An application for permit to construct a boiler and an application for permit to operate a boiler at Florida Sugar Refinery, Inc.

7. An application for permit to construct A. G. Holley State Hospital incinerator in Lantana.

8. An application for permit to operate Doctors Hospital incinerator in Lake Worth.

9. An application for permit to construct Meekins, Inc. cement batching facility in Boca Raton.

10. An application for permit to construct Transit Mix concrete batching and block manufacturing facility.

11. An application to construct the Lake Worth Utilities Authority 20-30 megawatt gas turbine electric generator.

12. The review of carbon monoxide diffusion models related to several Department of Transportation highway projects within the County.

13. An application for a permit to construct the City of Pahokee incinerator.

14. An application for a permit to operate Consolidated Tank Terminals of Florida molasses storage tank in Riviera Beach.

15. An application for permit to construct Rinker Materials Corporation ready-mix concrete and concrete block plant in Boynton Beach.

16. An application for permit to operate Rubin Construction Company asphalt concrete plant in West Palm Beach.

17. An application for permit to operate Gulf & Western Food products boilers in South Bay.

Pursuant to Chapter 17-2, Florida Administrative Code, thirty-one (31) active incinerators were inspected during this period. Recommendations for the improvement of incinerator operation found to be in violation of Chapter 17-2 were discussed with owners.

IX

TECHNICAL STUDIES

INTRODUCTION

The following routine analyses were performed during the reporting period.

- Suspended Particulate (Daily/Monthly)
  - Total Gravimetric
  - Benzene Soluble Organics
  - Sulfates
  - Nitrates
- Dustfall (Monthly)
  - Total
  - Combustion Loss
  - Soluble
  - Insoluble
- Microscopic Morphology

Ambient air sampling for suspended particulate and dustfall at the twelve permanent monitoring stations and microscopic morphology of dustfall samples have been continued as described in previous annual reports.

Gaseous sampling at the permanent monitoring site in West Palm Beach for total oxidants, nitrogen dioxide, sulfur dioxide, carbon monoxide and total hydrocarbons was continued until the fourth quarter of the year. During this quarter the Technicon instruments were replaced by new instruments to measure sulfur dioxide, ozone, and nitrogen dioxide.

NO_2 Bubblers were located at two locations within the county, as required by the Florida Air Implementation Plan. Location indicated in the Plan placed one at Florida Atlantic University, Boca Raton and one at the Palm Beach Mall, West Palm Beach. These Bubblers have been in operation since November, 1973. Data for measured pollutant levels and details on major technical studies are provided below.

PERMANENT MONITORING NETWORK

Palm Beach County's permanent monitoring network, as decribed in previous reports has been maintained throughout the report period. No new stations have been added.

Tabulated results for suspended particulate and dustfall for the year 1973, are reported in Tables 4, 5, & 6. The range of probable logarithmic values, total suspended particulate, 1972 and 1973 are presented in Figure 1. Tables 7, 8 & 9 summarize annual totals reported for these parameters for the years 1969-1973. Geometric Means and twenty-four hour maximum of all stations are related to the Southeast Florida Ambient Air Standard in Table 10.

GASEOUS MONITORING

Gaseous monitoring is reported on the basis of one calendar year, 1973, for all pollutants measured at the permanent monitoring station in West Palm Beach. Additional tables for those pollutants which were involved in instrument change have been provided to give a 12 month "yearly" sampling period.

Total oxidants values for the calendar year, 1973, January 1 thru November 1, are presented in Table 11. A twelve month study is presented in Table 12. On September 6, a MEC Model 1100 (McMillan Electronic Corporation) chemilumencsence analyzer for ozone was placed on line. Data values for this parameter are presented in Table 13. Figures 2, 3, & 4 present the relationship of the natural log values of concentrations to time and allow extrapolation to the probable mean values for these study periods.

Nitrogen dioxide values for the calendar year, 1973, January 1 thru November 15th are presented in Table 14. A twelve month study period for this pollutant, November 14, 1972 to November 15, 1973 is presented in Table 15. Figures 5 and 6 relate natural log values of concentrations to time. On November 7, 1973 a MEC Model 1200 $NO-NO_x$ (McMillan Electronics Corporation) was placed on line for the measurement of NO_2. Technical problems developed and lack of confidence in the measured values precluded the inclusion of any data recorded to date.

The NO_2 Bubblers were placed in operation on November 15, 1973. Values measured at the Boca Raton Station (N 8) are presented in Table 16. Values measured at the West Palm Beach Station (N 9) are presented in Table 17.

Ambient air concentrations for carbon monoxide, calendar year 1973 are presented in Table 18. Concentrations for the total study period, October 10, 1972 to December 31, 1973, are presented in Table 19. Figures 7 and 8 present relationship of natural log concentration values of these pollutant levels to time.

Total hydrocarbons values recorded during the 1973, calendar year are reported in Table 20. Table 21 presents these values for the total study period, October 10, 1972-December 1973. Figures 9 and 10 relate these values to time measured.

Table 22 presents SO_2 values for the calendar year 1973. January 1 thru November 19, 1973. Table 23 presents SO_2 values measured thru a 12 month period, November 14, 1972-November 19, 1973. Figures 11 and 12 relate to these tables. On November 19, 1973, a Beckman 906-A SO_2 analyzer based on coulometric titration was placed on line. Data based on this instrument for the period November 19-December 31, 1973 are presented in Table 24.

The special study of SO_2 levels in the Belle Glade area has been continued. Table 25 covers the study at the Glades Office Building (Scientific Industries SO_2 Analyzer-Recorder) September 21, 1972-May 1, 1973. Chart 13 relates to this study. Table 26 records the study at the Belle Glade Health Department (Scientific Industries SO_2 Analyzer-Recorder) for the period December 1, 1972 to May 18, 1973. Figure 14 relates to this data. The special study has been resumed at the Belle Glade Health Department using the Technicon Auto-Analyzer for SO_2.

This study was begun on December 18 and data thru December 31 is presented in Table 27. Figure 15 relates to this study.

Historical data for these pollutants at all monitoring sites in the County is presented in Table 28. Table 29 relates measured values of these pollutants for the year 1973 to the Southeast Florida Ambient Air Quality Standard.

The data acquisition System was accepted in December following a successful five day test during which no breakdown occurred and no invalid readouts were recorded. However, continuing breakdowns of the system have limited its usefulness to the agency.

TABLE 4
TOTAL SUSPENDED PARTICULATES - 1973

	NUMBER OF SAMPLES													CONCENTRATION ug/M^3				
LOCATION	J	F	M	A	M	J	J	A	S	O	N	D	TOTAL	MAX	MIN	A.MEAN	G.MEAN	Sg
Tequesta	8	7	8	7	8	7	8	8	6	6	8	7	88	85.4	5.3	33.6	31.4	1.49
North Palm Bch	7	7	8	7	8	6	8	8	7	7	8	7	88	133.2	16.6	38.2	35.3	1.47
West Palm Beach	8	7	8	5	7	7	8	7	7	6	8	6	84	101.9	10.8	40.5	38.0	1.49
Lake Worth	8	7	8	7	6	7	8	8	7	7	8	5	86	85.6	13.3	37.7	35.3	1.39
Delray Beach	8	7	8	6	8	7	8	8	7	6	8	7	88	92.9	10.9	40.0	37.6	1.46
Boca Raton	8	7	7	6	8	6	8	8	6	7	7	5	83	106.5	13.6	43.1	40.2	1.46
Royal Palm Bch	8	6	8	7	8	7	8	8	7	7	7	7	88	65.5	9.1	28.1	26.2	1.45
Belle Glade	8	7	8	7	8	7	8	8	7	8	8	7	91	151.0	20.3	59.8	54.0	1.61
Grammercy Park	8	7	8	7	8	7	8	8	7	7	8	7	90	145.3	11.7	33.2	30.7	1.45
SW. F. D.	8	7	8	6	6	7	8	7	5	7	8	7	84	109.0	19.0	45.3	42.5	1.43
ST. Vincent	8	7	7	6	8	6	7	8	7	7	8	7	86	77.8	11.5	30.8	28.9	1.53
Marymount	8	7	8	7	8	7	8	8	7	7	8	7	90	79.6	11.0	31.6	29.6	1.43

TABLE 5
MONTHLY AVERAGE CONTENT - SUSPENDED PARTICULATE - 1973

LOCATION	ITEMS MEASURED	ARITHMETIC AVERAGE ug/m^3 J	F	M	A	M	J	J	A	S	O	N	D	ANNUAL
Tequesta	Total Suspended Particulates	39.3	28.6	37.0	38.7	38.7	30.2	31.4	30.0	31.2	32.8	33.4	30.6	33.6
	Organics, Benzene Solubles	1.76	1.86	0.93	1.00	0.82	1.34	1.35	2.11	0.88	0.95	1.65	1.28	1.33
	Sulfates	4.21	4.63	3.81	2.69	4.47	3.97	2.40	3.66	1.39	1.31	1.58	2.20	3.03
	Nitrates	0.81	1.08	0.60	0.72	1.21	0.97	1.42	1.17	0.79	1.31	1.43	0.86	1.03
North Palm Beach	Total Suspended Particulates	37.9	34.1	36.1	48.2	45.3	45.0	32.8	33.4	34.2	36.5	40.4	35.8	38.2
	Organics, Benzene Solubles	2.18	3.05	1.07	0.93	2.20	2.02	1.48	2.62	1.31	1.12	1.38	1.90	1.77
	Sulfates	4.33	5.94	4.19	3.11	5.08	4.34	3.60	2.65	1.63	1.26	3.52	2.23	3.49
	Nitrates	0.88	1.54	0.66	0.99	1.80	1.20	1.10	1.14	0.72	0.98	1.52	0.74	1.11
West Palm Beach	Total Suspended Particulates	50.1	28.0	38.7	50.1	47.0	36.4	39.1	46.0	37.2	35.7	39.2	39.6	40.5
	Organics, Benzene Solubles	3.10	2.42	1.57	1.45	1.79	1.97	2.63	3.63	0.82	2.13	1.10	1.97	2.05
	Sulfates	4.22	3.98	2.77	2.06	4.72	3.23	2.98	2.46	1.72	1.32	3.12	2.13	2.89
	Nitrates	0.62	1.08	0.60	0.86	2.07	0.84	0.97	1.24	0.90	1.09	1.25	0.65	1.01

TABLE 5 (CONT)
MONTHLY AVERAGE CONTENT - SUSPENDED PARTICULATE - 1973

LOCATION	ITEMS MEASURED	ARITHMETIC AVERAGE ug/m^3 J	F	M	A	M	J	J	A	S	O	N	D	ANNUAL
Lake Worth														
	Total Suspended Particulates	42.0	33.9	35.2	41.0	53.4	38.1	39.0	34.0	29.4	32.6	38.4	37.4	37.7
	Organics, Benzene Soluble	0.91	2.06	1.35	0.92	1.31	1.29	1.82	1.28	1.02	1.38	1.34	2.95	1.47
	Sulfates	3.15	4.02	4.10	2.22	5.21	3.86	3.63	1.09	1.54	1.86	4.02	1.87	3.05
	Nitrates	0.93	1.57	0.70	0.90	2.07	1.29	1.28	1.29	0.94	1.09	1.18	1.02	1.19
Delray Beach														
	Total Suspended Particulates	46.8	32.2	37.0	52.0	49.5	42.4	38.7	39.0	39.3	33.1	36.0	33.7	40.0
	Organics, Benzene Soluble	1.49	1.40	1.53	1.33	2.22	2.98	1.27	1.17	0.47	1.37	0.99	1.89	1.51
	Sulfates	3.23	4.08	3.40	4.04	5.93	3.48	2.99	0.92	1.40	2.19	3.95	2.00	3.13
	Nitrates	0.85	1.40	0.67	0.89	1.93	1.03	1.20	1.17	1.01	1.14	1.22	0.90	1.12
Boca Raton														
	Total Suspended Particulates	52.2	51.7	44.1	42.3	54.4	42.8	37.9	36.4	34.8	36.9	41.0	39.3	43.1
	Organics, Benzene Soluble	1.43	2.34	1.46	0.63	1.71	3.36	1.27	2.26	1.27	1.21	1.57	1.25	1.65
	Sulfates	3.75	4.05	9.89	4.00	5.10	4.05	2.99	1.11	1.70	1.66	2.80	2.59	3.64
	Nitrates	1.21	1.96	1.37	0.82	2.04	1.25	1.20	1.05	1.08	1.20	1.15	1.20	1.29

TABLE 5 (CONT)
MONTHLY AVERAGE CONTENT - SUSPENDED PARTICULATE - 1973

LOCATION	ITEMS MEASURED	ARITHMETIC AVERAGES ug/m^3												
		J	F	M	A	M	J	J	A	S	O	N	D	ANNUAL
Royal Palm Beach	Total Suspended Particulates	28.9	26.4	31.8	32.7	41.7	24.2	24.6	24.7	24.0	30.1	24.8	21.9	28.1
	Organics, Benzene Solubles	1.34	1.74	1.28	2.80	2.85	1.57	2.06	1.57	0.74	1.04	0.99	0.59	1.55
	Sulfates	3.19	4.28	3.32	2.87	4.77	3.12	2.23	1.57	1.33	2.02	1.97	1.83	2.71
	Nitrates	0.88	1.32	0.76	1.11	1.77	0.76	0.88	0.92	1.01	1.47	1.24	0.88	1.08
Belle Glade	Total Suspended Particulates	73.1	67.4	82.8	75.8	61.6	38.9	36.8	37.5	32.6	57.4	84.2	67.3	59.8
	Organics, Benzene Solubles	2.64	4.00	2.44	2.20	3.19	2.82	1.76	2.32	1.10	1.81	3.83	1.97	2.50
	Sulfates	5.89	5.57	5.99	6.57	4.31	4.01	1.62	1.67	1.21	2.46	5.30	3.00	3.97
	Nitrates	0.85	1.70	1.25	1.52	2.03	1.15	1.06	1.25	0.94	1.46	2.05	1.35	1.38
Marymount	Total Suspended Particulates	35.9	33.6	29.5	31.9	45.7	29.3	31.2	28.1	28.6	27.0	27.1	30.1	31.6
	Organics, Benzene Solubles	0.78	0.90	0.71	1.25	1.84	1.19	1.33	1.21	0.64	1.20	1.09	3.22	1.28
	Sulfates	3.45	6.17	8.87	3.95	5.78	3.63	1.25	2.41	1.56	1.91	2.71	2.15	3.65
	Nitrates	0.97	1.49	0.65	0.99	1.69	0.87	0.85	0.95	0.99	0.92	1.23	0.93	1.04

TABLE 5 (CONT)
MONTHLY AVERAGE CONTENT - SUSPENDED PARTICULATE - 1973

LOCATION	ITEMS MEASURED	ARITHMETIC AVERAGE ug/m^3												
		J	F	M	A	M	J	J	A	S	O	N	D	ANNUAL
Saint Vincent	Total Suspended Particulates	33.4	27.7	26.6	32.6	46.8	30.9	32.3	26.9	28.3	28.6	26.6	27.3	30.8
	Organics, Benzene Solubles	1.05	1.31	0.75	1.48	5.91	3.05	1.77	1.48	1.22	1.44	0.96	0.54	1.75
	Sulfates	3.53	4.50	2.74	2.91	4.56	1.82	0.91	1.78	1.10	1.55	3.46	1.78	2.55
	Nitrates	0.97	1.43	0.70	1.13	2.17	1.03	1.26	1.04	0.82	0.94	1.07	0.96	1.13
Southwest Fire Department	Total Suspended Particulates	48.4	46.5	44.4	51.9	61.6	36.6	42.8	38.8	36.1	54.6	43.0	39.2	45.3
	Organics, Benzene Solubles	2.13	3.43	1.82	2.90	4.64	2.02	2.08	2.91	4.18	3.34	1.93	2.23	2.80
	Sulfates	3.87	4.83	4.68	2.73	5.01	2.73	2.01	1.80	1.52	1.80	4.55	2.13	3.14
	Nitrates	0.81	0.86	0.71	0.93	2.10	0.65	1.22	0.86	1.04	0.97	1.39	0.71	1.02
Grammercy Park	Total Suspended Particulates	34.8	27.8	40.5	35.7	46.2	29.1	44.9	29.4	27.7	23.5	29.4	25.9	33.2
	Organics, Benzene Solubles	1.79	1.22	0.77	0.88	2.08	1.44	2.36	1.70	0.50	0.72	1.04	1.24	1.31
	Sulfates	4.33	4.51	3.83	3.04	4.40	3.43	2.17	1.83	1.18	1.40	3.00	1.94	2.92
	Nitrates	0.90	1.50	0.86	0.80	1.57	1.34	0.90	1.14	0.90	1.12	1.34	0.75	1.09

TABLE 6
ANNUAL DUSTFALL - 1973

LOCATION	NO. OF SAMPLES	TOTAL CONCENTRATIONS TONS/mi^2			ARITHMETIC AVERAGE TONS/mi^2		
		MAX	MIN	ARITH. AVERAGE	INSOL	SOL	COMB LOSS
Tequesta	9	12.13	3.76	7.36	2.79	4.61	1.55
North Palm Beach	10	12.13	5.44	8.87	3.07	5.52	1.80
West Palm Beach	9	12.41	7.80	10.39	5.02	6.83	2.01
Lake Worth	11	10.59	5.72	8.30	2.93	5.32	1.40
Delray Beach	11	10.18	3.21	7.10	2.79	4.26	0.12
Boca Raton	12	12.16	3.76	9.26	3.35	5.90	1.40
Royal Palm Beach	6	15.89	3.07	7.92	4.46	6.62	1.69
Belle Glade	11	18.82	4.46	12.17	6.13	5.61	2.63
Grammercy Park	9	13.66	4.74	8.63	5.44	5.87	2.23
South West Fire Station	12	13.52	4.88	10.33	5.30	5.02	1.99
Saint Vincent	11	10.04	1.95	6.41	3.48	3.66	1.99
Marymount	11	13.38	2.79	6.56	2.79	4.58	1.58

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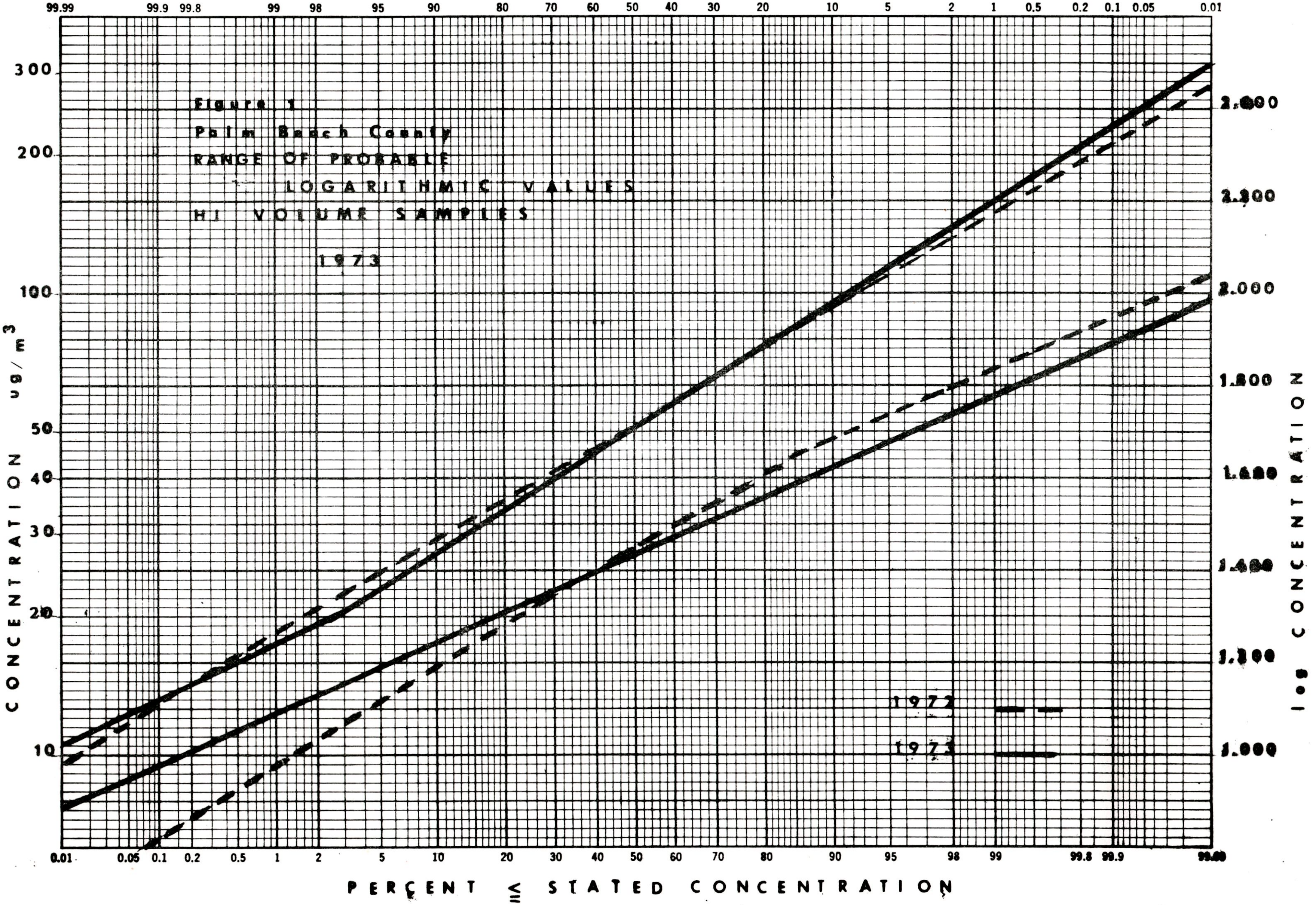


Figure 1
Palm Beach County
RANGE OF PROBABLE LOGARITHMIC VALUES
HI VOLUME SAMPLES
1973

TABLE 7
TOTAL SUSPENDED PARTICULATE ug/m^3

STATION	PARAMETER	YEAR 1969	1970	1971	1972	1973
Tequesta	Maximum	71.2	74.3	122.3	112.3	85.4
	Minimum	7.3	13.3	10.7	12.2	5.3
	Arithmetic Mean	26.9	30.4	34.6	33.0	33.6
	Geometric Mean	24.6	28.3	30.8	30.3	31.4
	Geometric Std. Deviation	1.51	1.45	1.61	1.48	1.49
North Palm Beach	Maximum	71.8	82.3	167.5	94.8	133.2
	Minimum	7.7	1.3	0.4	12.8	16.6
	Arithmetic Mean	32.2	31.7	40.6	37.0	38.2
	Geometric Mean	29.5	28.4	30.7	33.7	35.3
	Geometric Std. Deviation	1.63	1.76	2.93	1.49	1.47
West Palm Beach	Maximum	109.3	115.7	121.1	133.6	101.9
	Minimum	9.6	13.9	15.2	15.2	10.8
	Arithmetic Mean	48.7	40.9	58.7	49.9	40.5
	Geometric Mean	43.9	39.5	53.4	45.9	38.0
	Geometric Std. Deviation	1.56	1.42	1.19	1.49	1.49
Lake Worth	Maximum	351.9	224.8	95.6	89.8	85.6
	Minimum	7.3	8.0	10.2	12.9	13.3
	Arithmetic Mean	32.9	30.9	37.2	34.8	37.7
	Geometric Mean	26.4	28.2	31.7	32.3	35.3
	Geometric Std. Deviation	1.78	1.47	1.85	1.49	1.39
Delray Beach	Maximum	164.9	76.7	142.4	108.0	92.9
	Minimum	13.3	8.3	12.2	15.9	10.9
	Arithmetic Mean	40.1	36.2	36.4	38.5	40.0
	Geometric Mean	38.8	33.6	32.0	35.4	37.6
	Geometric Std. Deviation	1.47	1.49	1.64	1.49	1.46

TABLE 7 (CONT)
TOTAL SUSPENDED PARTICULATE ug/m^3

		YEAR				
STATION	PARAMETER	1969	1970	1971	1972	1973
Boca Raton	Maximum	83.1	80.1	237.9	275.3	106.5
	Minimum	9.5	9.6	13.3	17.0	13.6
	Arithmetic Mean	36.4	33.5	49.1	44.9	43.1
	Geometric Mean	32.9	31.0	41.1	39.9	40.2
	Geometric Std. Deviation	1.60	1.48	2.09	1.56	1.46
Royal Palm Beach	Maximum	52.5	71.7	131.5	102.0	65.5
	Minimum	7.2	2.1	1.6	7.0	9.1
	Arithmetic Mean	23.6	25.8	30.7	31.8	28.1
	Geometric Mean	21.5	23.3	24.4	28.3	26.2
	Geometric Std. Deviation	1.57	1.59	2.13	1.37	1.45
Belle Glade	Maximum	175.7	273.9	222.7	173.3	151.0
	Minimum	12.7	14.5	12.6	19.8	20.3
	Arithmentic Mean	53.8	54.6	61.4	58.6	59.8
	Geometric Mean	46.0	47.1	53.1	52.3	54.0
	Geometric Std. Deviation	1.76	1.70	1.64	1.60	1.61
Grammercy Park	Maximum				74.5	145.3
	Minimum				13.3	11.7
	Arithmetic Mean				31.2	33.2
	Geometric Mean				28.7	30.7
	Geometric Std. Deviation				1.42	1.45
Southwest Fire Department	Maximum				94.8	109.0
	Minimum				18.3	19.0
	Arithmetic Mean				44.4	45.3
	Geometric Mean				41.6	42.5
	Geometric Std. Deviation				1.43	1.43

TABLE 7 (CONT)
TOTAL SUSPENDED PARTICULATE ug/m^3

		YEAR				
STATION	PARAMETER	1969	1970	1971	1972	1973
St. Vincent	Maximum				69.9	77.8
	Minimum				11.9	11.5
	Arithmetic Mean				32.1	30.8
	Geometric Mean				29.2	28.9
	Geometric Std. Deviation				1.51	1.53
Marymount	Maximum				68.1	79.6
	Minimum				11.2	11.0
	Arithmetic Mean				29.6	31.6
	Geometric Mean				26.9	29.6
	Geometric Sdt. Deviation				1.54	1.43

TABLE 8
ANNUAL AVERAGE CONTENT - SUSPENDED PARTICULATE
ARITHMETIC AVERAGES ug/m^3

STATION	PARAMETER	YEAR 1969	1970	1971	1972	1973
Tequesta	Total Suspended Particulate	26.9	30.4	34.6	33.0	33.6
	Organics, Benzene Soluble	1.6	1.6	4.0	1.0	1.3
	Sulfates	3.6	4.2	3.2	3.5	3.0
	Nitrates	0.6	0.6	0.8	0.8	1.0
North Palm Beach	Total Suspended Particulate	32.2	31.7	40.6	37.0	38.2
	Organics, Benzene Soluble	3.9	4.4	4.8	1.2	1.8
	Sulfates	2.4	3.4	3.2	3.1	3.5
	Nitrates	0.7	0.7	0.9	0.8	1.1
West Palm Beach	Total Suspended Particulate	48.7	40.9	58.7	49.6	40.5
	Organics, Benzene Soluble	3.3	3.8	4.7	2.4	2.0
	Sulfates	4.1	3.2	3.6	3.7	2.9
	Nitrates	0.8	0.7	1.2	0.9	1.0
Lake Worth	Total Suspended Particulate	32.9	30.9	37.2	34.8	37.7
	Organics, Benzene Soluble	1.5	1.7	3.3	1.2	1.5
	Sulfates	3.3	3.2	3.1	3.6	3.0
	Nitrates	0.7	0.8	1.0	0.7	1.2
Delray Beach	Total Suspended Particulate	40.1	36.2	36.4	38.5	40.0
	Organics, Benzene Soluble	2.8	2.9	3.5	1.0	1.5
	Sulfates	3.9	4.1	2.8	3.5	3.1
	Nitrates	0.8	0.8	0.9	0.8	1.1
Boca Raton	Total Suspended Particulate	36.4	33.5	49.1	44.9	43.1
	Organics, Benzene Soluble	1.6	2.4	3.2	1.1	1.6
	Sulfates	3.9	3.2	2.9	3.0	3.6
	Nitrates	0.7	0.8	0.9	0.8	1.3

TABLE 8 (CONT)
ANNUAL AVERAGE CONTENT - SUSPENDED PARTICULATE
ARITHMETIC AVERAGES ug/m^3

		YEAR				
STATION	PARAMETER	1969	1970	1971	1972	1973
Royal Palm Beach	Total Suspended Particulate	23.6	25.8	30.7	31.8	28.1
	Organics, Benzene Soluble	1.6	2.3	4.2	0.8	1.6
	Sulfates	3.4	3.6	2.2	3.0	2.7
	Nitrates	0.7	0.8	0.9	0.8	1.1
Belle Glade	Total Suspended Particulate	53.8	54.6	61.4	58.6	59.8
	Orgaincs, Benzene Soluble	2.8	3.6	5.6	2.0	2.5
	Sulfates	4.2	4.1	3.3	3.4	4.0
	Nitrates	0.8	1.0	1.2	1.1	1.4
Grammercy Park	Total Suspended Particulate				31.2	33.2
	Organics, Benzene Soluble				1.3	1.3
	Sulfates				2.8	2.9
	Nitrates				0.8	1.1
Southwest Fire Department	Total Suspended Particulate				44.4	45.3
	Organics, Benzene Soluble				1.2	2.8
	Sulfates				2.5	3.1
	Nitrates				0.8	1.0
St. Vincent	Total Suspended Particulate				32.1	30.8
	Organics, Benzene Soluble				2.1	1.8
	Sulfates				2.9	2.6
	Nitrates				0.8	1.1
Marymount	Total Suspended Particulate				29.6	31.6
	Organics, Benzene Soluble				1.4	1.3
	Sulfates				2.7	3.6
	Nitrates				0.8	1.0

TABLE 9
ANNUAL DUSTFALL T/mi^2

		YEAR				
STATION	PARAMETER	1969	1970	1971	1972	1973
Tequesta	Arithmetic Mean	8.3	8.31	8.97	9.34	7.36
	Insoluble	2.5	3.95	4.30	3.90	2.79
	Soluble	5.8	4.36	4.70	5.58	4.61
	Comb. Loss	1.3	0.95	1.70	2.23	1.55
North Palm Beach	Arithmetic Mean	8.0	9.29	8.66	8.78	8.87
	Insoluble	2.2	2.52	4.51	2.51	3.07
	Soluble	5.8	6.77	4.07	5.16	5.52
	Comb. Loss	0.9	1.38	1.08	1.95	1.80
West Palm Beach	Arithmetic Mean	16.3	11.34	10.92	11.43	10.39
	Insoluble	6.7	5.26	5.28	4.18	5.02
	Soluble	9.6	6.08	5.94	6.83	6.83
	Comb. Loss	2.4	1.93	2.26	2.09	2.01
Lake Worth	Arithmetic Mean	10.1	8.96	10.44	7.95	8.30
	Insoluble	3.2	3.24	5.85	2.37	2.93
	Soluble	6.9	5.71	4.59	5.72	5.32
	Comb. Loss	1.7	0.82	2.20	1.25	1.40
Delray Beach	Arithmetic Mean	12.0	10.05	6.24	6.55	7.10
	Insoluble	4.3	3.12	2.82	2.09	2.79
	Soluble	7.7	6.62	3.43	4.60	4.26
	Comb. Loss	2.0	1.27	1.39	0.84	0.12
Boca Raton	Arithmetic Mean	8.7	9.27	8.69	8.36	9.26
	Insoluble	3.2	3.01	3.89	2.37	3.35
	Soluble	5.5	6.26	4.75	5.85	5.90
	Comb. Loss	1.3	1.01	1.42	1.12	1.40

TABLE 9 (CONT)
ANNUAL DUSTFALL T/mi^2

STATION	PARAMETER	YEAR 1969	1970	1971	1972	1973
Royal Palm Beach	Arithmetic Mean	11.3	19.99	21.56	27.32	7.92
	Insoluble	5.0	7.86	7.94	8.61	4.46
	Soluble	6.3	12.13	13.61	18.82	6.62
	Comb. Loss	1.1	2.96	1.46	2.79	1.69
Belle Glade	Arithmetic Mean	10.5	11.30	9.88	9.62	12.17
	Insoluble	5.1	5.96	5.94	4.88	6.13
	Soluble	5.4	5.34	3.94	4.46	5.61
	Comb. Loss	2.0	2.23	2.15	1.95	2.63
Grammercy Park	Arithmetic Mean					8.63
	Insoluble					5.44
	Soluble					5.87
	Comb. Loss					2.23
Southwest Fire Dept.	Arithmetic Mean					10.33
	Insoluble					5.30
	Soluble					5.02
	Comb. Loss					1.99
St. Vincent	Arithmetic Mean					6.41
	Insoluble					3.48
	Soluble					3.66
	Comb. Loss					1.99
Marymount	Arithmetic Mean					6.56
	Insoluble					2.79
	Soluble					4.58
	Comb. Loss					1.58

TABLE 10

AMBIENT AIR QUALITY STANDARD -
SOUTH EAST FLORIDA AIR QUALITY REGION
1973
SUSPENDED PARTICULATE

AIR QUALITY STANDARD	ANNUAL GEOMETRIC MEAN 50	MAXIMUM 24 HOUR CONCENTRATION 180
Tequesta	31.4	85.4
North Palm Beach	35.3	133.2
West Palm Beach	38.0	101.9
Lake Worth	35.3	85.6
Delray Beach	37.6	92.9
Boca Raton	40.2	106.5
Royal Palm Beach	26.2	65.5
Belle Glade	54.0	151.0
Marymount	29.6	79.6
St. Vincent de Paul	28.9	77.8
Southwest Fire Department	42.5	109.0
Grammercy Park	30.7	145.3

TABLE 11
AMBIENT AIR, TOTAL OXIDANTS, PPM
JANUARY 1, - NOVEMBER 1, 1973
WEST PALM BEACH, FLORIDA

	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	ANNUAL	%	CUM %
1 Hr. Maximum	0.075	0.155	0.140	0.058	0.155		
8 Hr. Maximum	0.063	0.061	0.056	0.049	0.063		
24 Hr. Maximum	0.042	0.056	0.036	0.021	0.056		
CONCENTRATION		**FREQUENCY DISTRIBUTION MINUTES**					
<0.010	54195	33720	76935	17742	164850	52.19	52.19
0.010-0.019	18570	38775	23265	16425	80610	25.52	77.71
0.020-0.029	10515	18495	6060	3390	35070	11.10	88.81
0.030-0.039	7890	8100	2670	390	18660	5.91	94.71
0.040-0.049	4110	3540	1185	45	8835	2.77	97.51
0.050-0.059	1500	2610	690	90	4800	1.52	99.03
0.060-0.069	435	1245	270		1950	0.62	99.65
0.070-0.079	240	255	195	15	690	0.22	99.87
0.080-0.089	15	105	120		240	0.08	99.94
0.090-0.099			30		30	0.01	99.95
0.100-0.149		30	45		75	0.02	99.98
0.150-0.199		45	30		75	0.02	100.00
~~0.200-0.249~~							
~~0.250-0.299~~							
>0.300	97470	106920	111495	38100	315885		
DOWNTIME							
Auto Baseline	13920	14415	15615	5430	43950		
Routine Maint.	3900	3870	2865	240	10635		
Mechanical Breakdown	13815	4725	2505	1455	21045		
Operator Error	390	540	0	450	930		
Dynatronics	105	0	0	0	105		
Power Failure	0	510	0	0	510		
TOTAL	32130	24060	20985	7575	77175		
TOTAL TIME AT SITE	129600	130980	132480	45585	393060		

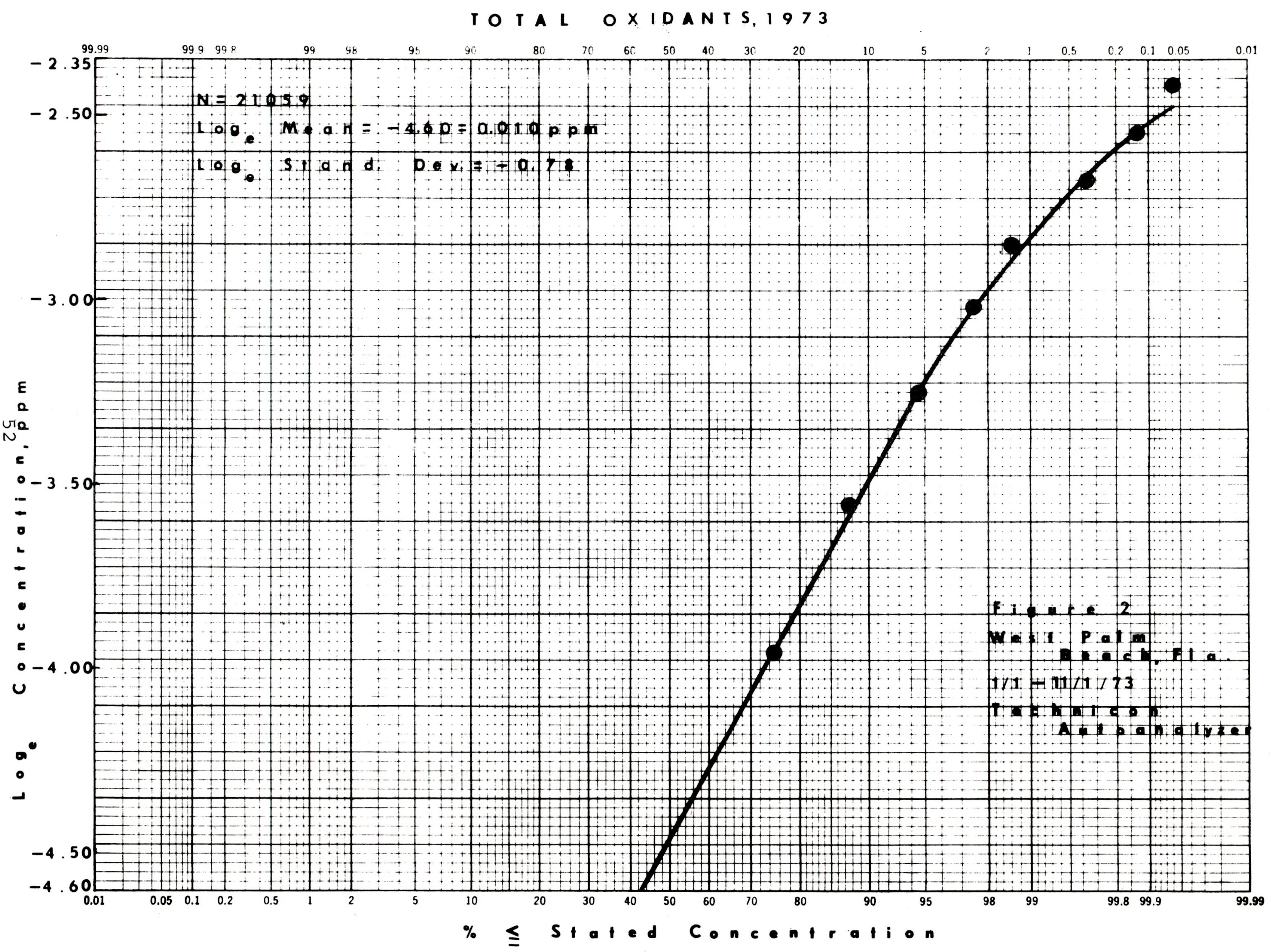


Figure 2
West Palm Beach, Fla.
1/1 – 11/1/73
Technicon Autoanalyzer

TABLE 12
AMBIENT AIR, TOTAL OXIDANTS, PPM
NOVEMBER 14, 1972 - NOVEMBER 1, 1973
WEST PALM BEACH, FLORIDA

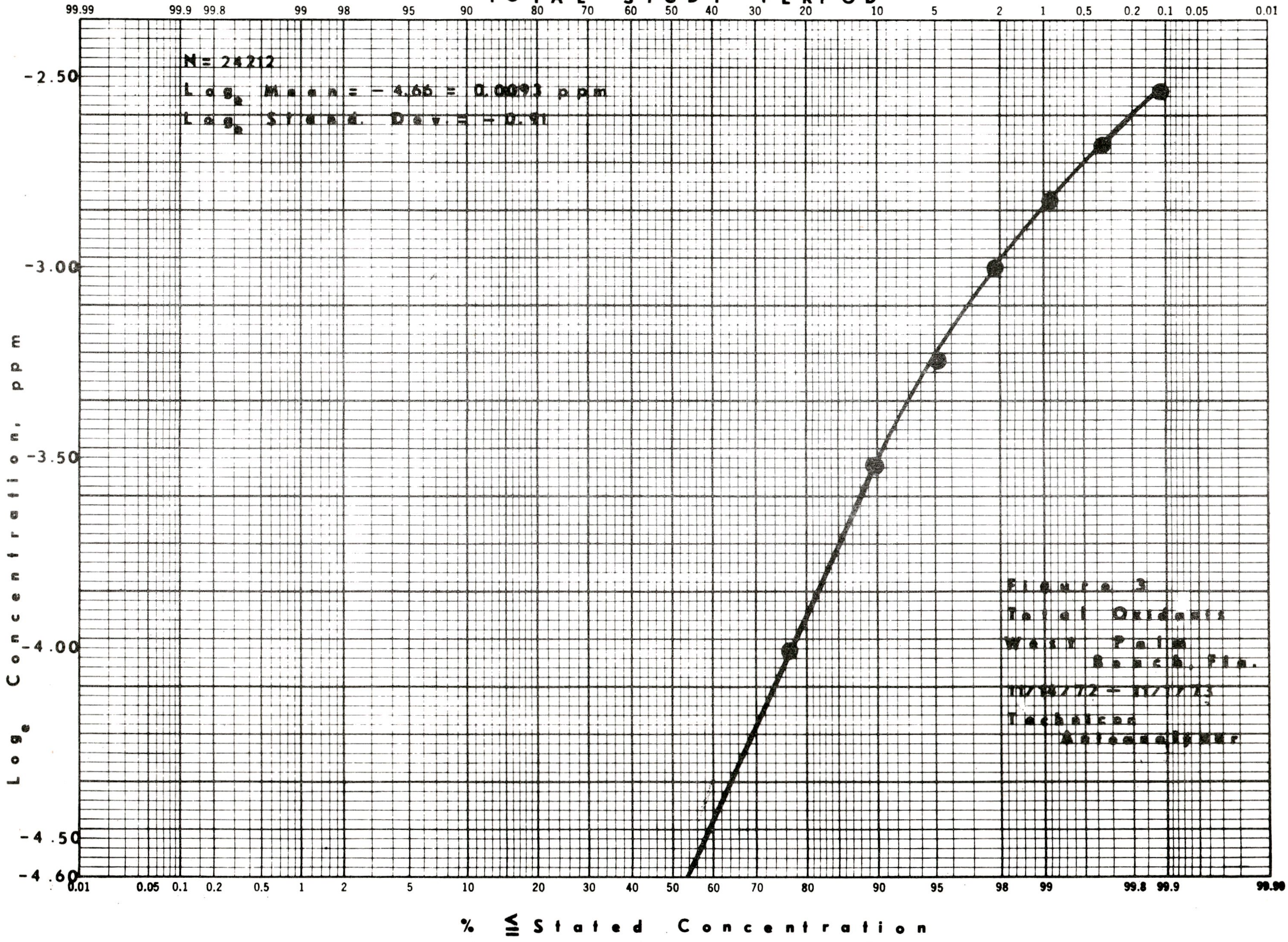
	QUARTER 4 1972	QUARTER 1 1973	QUARTER 2 1973	QUARTER 3 1973	QUARTER 4 1973	TOTAL STUDY PERIOD	%	CUM %
1 Hr. Maximum	>0.187	0.075	0.155	0.140	0.058	>0.187		
8 Hr. Maximum	>0.040	0.063	0.061	0.056	0.049	0.063		
24 Hr. Maximum	>0.037	0.042	0.056	0.036	0.021	0.056		
CONCENTRATION			FREQUENCY DISTRIBUTION MINUTES					
<0.010 ppm	12570	54195	33720	76935	17742	177420	48.85	48.85
0.010-0.019	22200	18570	38775	23265	16425	102810	28.31	77.16
0.020-0.029	9375	10515	18495	6060	3390	44445	12.24	89.40
0.030-0.039	2700	7890	8100	2670	390	21360	5.88	95.28
0.040-0.049	360	4110	3540	1185	45	9195	2.53	97.81
0.050-0.059	30	1500	2610	690	90	4830	1.33	99.14
0.060-0.069	15	435	1245	270		1965	0.54	99.68
0.070-0.079		240	255	195	15	690	0.19	99.87
0.080-0.089		15	105	120		240	0.07	99.93
0.090-0.099	15			30		45	0.01	99.95
0.100-0.149			30	45		75	0.02	99.97
0.150-0.199			45	30		75	0.02	99.99
0.200-0.249								
0.250-0.259								
>0.300	30					30	0.01	100.00
TOTAL	47295	97470	106920	111495	38100	363180		
DOWNTIME								
Auto Baseline	6720	13920	14415	15615	5430	50670		
Routine Maint.	1620	3900	3870	2865	240	12255		
Mechanical Breakdown	6165	13815	4725	2505	1455	27210		
Operator Error	4380	390	540	0	450	5310		
Dynatronics	1875	105	0	0	0	1980		
Power Failure	0	0	510	0	0	510		
TOTAL	20760	32130	24060	20985	7575	97935		
TOTAL TIME AT SITE	68055	129600	130980	132480	45585	461115		

NO. 340-PS 90 DIETZGEN GRAPH PAPER
PROBABILITY X 90 DIVISIONS

EUGENE DIETZGEN CO.
MADE IN U. S. A.

TOTAL OXIDANTS

TOTAL STUDY PERIOD



N = 24212

Log_e Mean = − 4.66 = 0.0093 ppm

Log_e Stand. Dev. = − 0.91

Figure 3
Total Oxidants
West Palm
Beach, Fla.
11/14/72 − 11/7/73
Technicon
Autoanalyzer

TABLE 13
AMBIENT AIR, OZONE, PPM
1973
WEST PALM BEACH, FLORIDA

	SEPTEMBER 9/6-9/30/73	OCTOBER	NOVEMBER	DECEMBER	TOTAL STUDY PICTURE	%	CUM %
1 Hr. Maximum	>0.100	0.104	0.065	0.063	>0.100		
3 Hr. Maximum	>0.100	0.089	0.058	0.061	>0.100		
8 Hr. Maximum	>0.071	0.067	0.050	0.047	>0.071		
24 Hr. Maximum	>0.054	0.047	0.044	0.033	>0.054		
CONCENTRATION			FREQUENCY DISTRIBUTION HOURS				
<0.010	136	85	122	139	482	17.77	17.77
0.010-0.019	194	96	122	191	603	22.24	40.02
0.020-0.029	119	233	188	207	747	27.55	67.57
0.030-0.039	79	172	171	161	583	21.50	89.08
0.040-0.049	23	79	72	38	212	7.81	96.90
0.050-0.059	8	22	17	4	51	1.88	98.78
0.060-0.069	11	4	1	2	18	0.66	99.94
0.070-0.079	2	1			3	0.11	99.55
0.080-0.089	3	1			4	0.14	99.70
0.090-0.099	3				3	0.11	99.81
>0.100	4	1			5	0.18	100.00
TOTAL	582	694	693	742	2711		
TOTAL DOWNTIME	4	50	27	2	83		
TOTAL TIME AT SITE	586	744	720	744	2794		

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OZONE – 1973

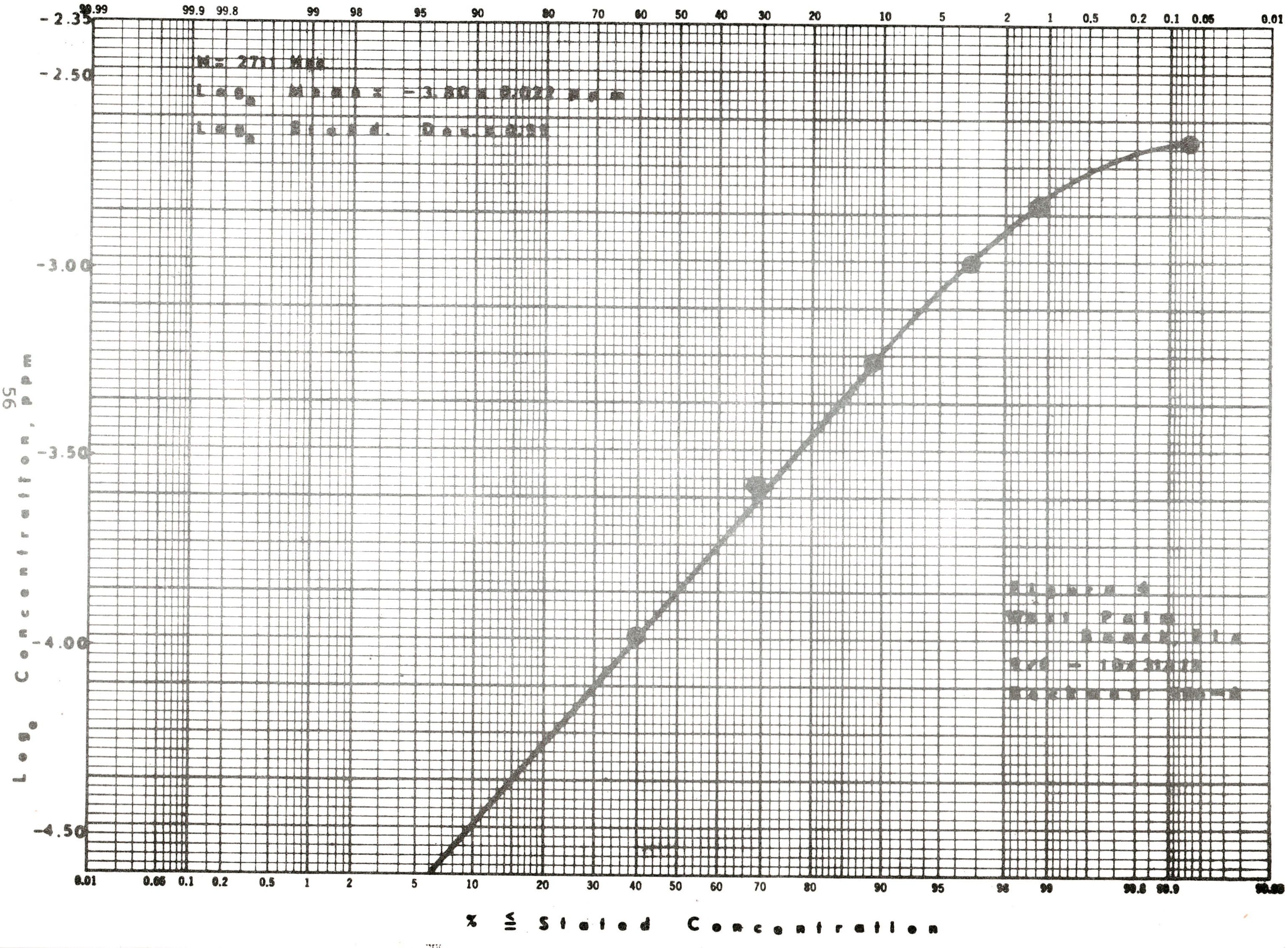

TABLE 14
AMBIENT AIR - NO_2, PPM
JANUARY 1 - NOVEMBER 15, 1973
WEST PALM BEACH, FLORIDA

	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	ANNUAL	%	CUM %
1 Hr. Maximum	0.060	0.056	0.026	0.040	0.060		
8 Hr. Maximum	0.047	0.043	0.022	0.034	0.047		
24 Hr. Maximum	0.027	0.023	0.014	0.018	0.027		
Arithmetic Mean	0.012	0.006	0.006	0.004	0.007		
CONCENTRATION		FREQUENCY DISTRIBUTION MINUTES					
<0.002 ppm	2340	9270	6000	14490	32100	9.14	9.14
0.002-0.005	25125	49635	59190	21225	155175	44.18	53.32
0.006-0.009	23790	28845	25620	9165	87420	24.89	78.21
0.010-0.019	20895	13965	12240	2670	49770	14.17	92.38
0.020-0.029	12240	3900	1710	915	18765	5.34	97.73
0.030-0.039	3660	660	30	555	4905	1.40	99.12
0.040-0.049	1710	660		45	2415	0.69	99.81
0.050-0.059	465	180			645	0.18	<100.00
0.060-0.069	15				15	<0.01	100.00
0.070-0.079							
0.080-0.089							
0.090-0.099							
TOTAL	90240	107115	104790	49065	351210		
DOWNTIME							
Auto Baseline	12780	14925	14640	6975	49320		
Routine Maint.	2670	2550	1890	1065	8175		
Mechanical Break-down	23805	1590	9690	5055	40140		
Operator Error	0	4380	1470	3165	9015		
Dynatronics	105	0	0	0	105		
Power Failure	0	420	0	0	420		
TOTAL	39360	23865	27690	16260	107175		
TOTAL TIME AT SITE	129600	130980	132480	65325	458385		

NO. 340-PS 90 DIETZGEN GRAPH PAPER
PROBABILITY X 90 DIVISIONS
EUGENE DIETZGEN CO.
MADE IN U. S. A.

NITROGEN DIOXIDE

1973

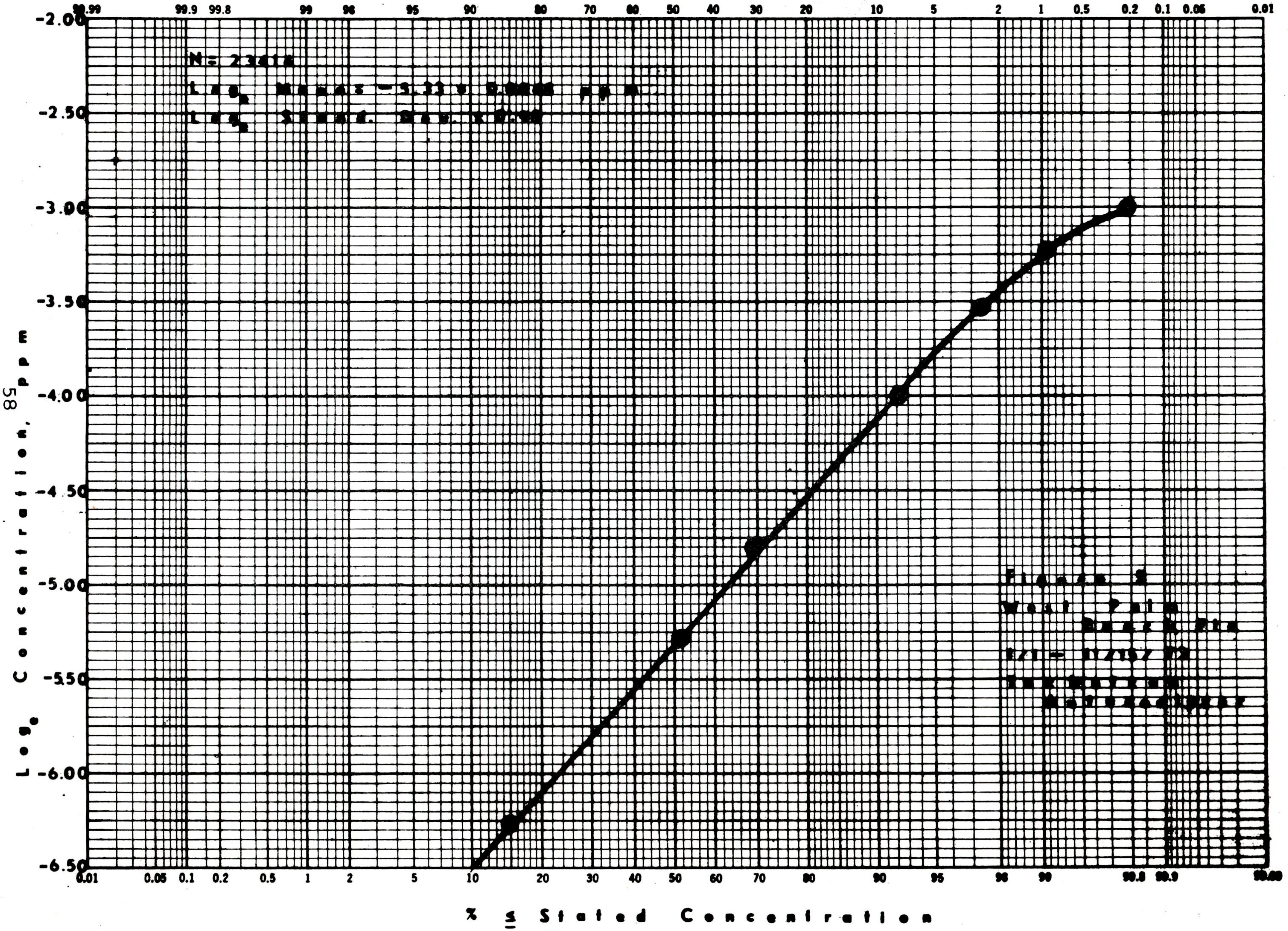

TABLE 15
AMBIENT AIR, NO_2, PPM
NOVEMBER 14, 1972 - NOVEMBER 15, 1973
WEST PALM BEACH, FLORIDA

	QUARTER 4 1972	QUARTER 1 1973	QUARTER 2 1973	QUARTER 3 1973	QUARTER 4 1973	TOTAL STUDY PERIOD	%	CUM %
1 Hr. Maximum	0.092	0.060	0.056	0.026	0.040	0.092		
8 Hr. Maximum	0.079	0.047	0.043	0.022	0.034	0.079		
24 Hr. Maximum	0.045	0.027	0.023	0.014	0.018	0.045		
Arithmetic Mean	0.017	0.012	0.006	0.006	0.004	0.009		
CONCENTRATION			FREQUENCY DISTRIBUTION MINUTES					
<0.002 ppm	75	2340	9270	6000	14490	32175	7.99	7:99
0.002-0.005	7785	25125	49635	59190	21225	162960	40.47	48.46
0.006-0.009	11025	23790	28845	25620	9165	98445	24.45	72.90
0.010-0.019	16440	20895	13965	12240	2670	66210	16.44	89.35
0.020-0.029	7560	12240	3900	1710	915	26325	6.54	95.88
0.030-0.039	4005	3660	660	30	555	8910	2.21	98.10
0.040-0.049	2520	1710	660		45	4935	1.23	99.32
0.050-0.059	1215	465	180			1860	0.46	99.78
0.060-0.069	465	15				480	0.20	99.90
0.070-0.079	180					180	0.04	99.95
0.080-0.089	150					150	0.04	99.99
0.090-0.099	60					60	0.01	100.00
TOTAL	51480	90240	107115	104790	49065	402690		
Downtime								
Auto Baseline	7350	12780	14925	14640	6975	56670		
Routine Maint.	1080	2670	2550	1890	1065	9255		
Mechanical Breakdown	6375	23805	1590	9690	5055	46515		
Operator Error	0	0	4380	1470	3165	9015		
Dynatronics	1815	105	0	0	0	1920		
Power Failure	0	0	420	0	0	420		
TOTAL	16620	39360	23865	27690	16260	123795		
TOTAL TIME AT SITE	68100	129600	130980	132480	65325	526485		

NO. 340-PS 90 DIETZGEN GRAPH PAPER
PROBABILITY X 90 DIVISIONS

EUGENE DIETZGEN CO.
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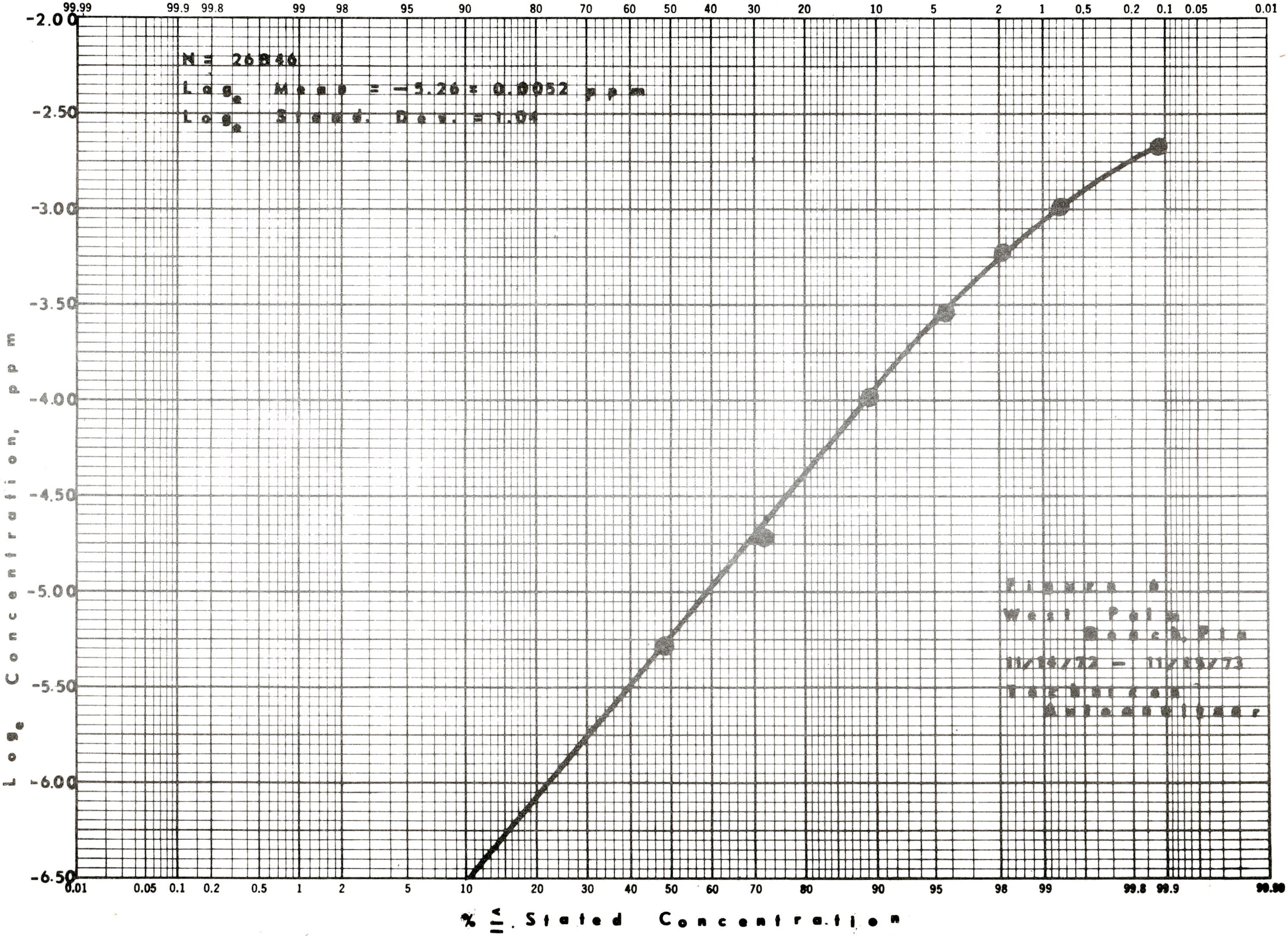
NITROGEN DIOXIDE

TOTAL STUDY PERIOD



N = 26846

$\log_e$ Mean = −5.26 ± 0.0052 ppm

$\log_e$ Stand. Dev. = 1.04

Figure 6

West Palm Beach, Fla

11/14/72 – 11/13/73

Technicon Autoanalyzer

TABLE 16

NO_2 BUBBLER - FLORIDA ATLANTIC UNIVERSITY (N 8)

BOCA RATON, FLORIDA

1973

SAMPLE DATE	CONCENTRATION ug/m^3
11/15-16/73	2.60
11/27-28/73	4.33
12/12-13/73	13.1
12/27-28/73	3.9

TABLE 17
NO_2 BUBBLER, PALM BEACH MALL (N 9)
WEST PALM BEACH, FLORIDA
1973

SAMPLE DATE	CONCENTRATION ug/m^3
11/14-15/73	0.41
11/27-28/73	6.66
12/12-13/73	11.8
12/27-28/73	15.0

TABLE 18
AMBIENT AIR, CARBON MONOXIDE, PPM
1973
WEST PALM BEACH, FLORIDA

	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	ANNUAL	%	CUM %
1 Hr. Maximum	8.9		4.2	7.2	8.9		
8 Hr. Maximum	6.3		1.8	4.0	6.3		
Geometric Mean					0.03		
CONCENTRATION			FREQUENCY DISTRIBUTION HOURS				
<1.0	1590	0	1221	1901	4712	92.72	92.72
1.0-1.4	34		19	58	111	2.18	94.90
1.5-1.9	4		1	7	12	0.24	95.14
2.0-2.4	31		22	57	110	2.16	97.30
2.5-2.9	19		6	37	62	1.23	98.52
3.0-3.4	11		3	13	27	0.53	99.06
3.5-3.9	6			7	13	0.26	99.31
4.0-4.4	3		1	6	10	0.20	99.51
4.5-4.9	4			6	10	0.20	99.70
5.0-5.4	3			1	4	0.08	99.78
5.5-5.9	2			1	3	0.06	99.84
6.0-6.4	1			1	2	0.04	99.88
6.5-6.9							
7.0-7.4				1	1	0.02	99.90
7.5-7.9	2				2	0.04	99.94
8.0-8.4	2				2	0.04	99.98
8.5-8.9	1				1	0.02	100.00
TOTAL	1713	0	1273	2096	5082		
TOTAL DOWNTIME	447	2184	935	112	3678		
TOTAL TIME AT SITE	2160	2184	2208	2208	8760		

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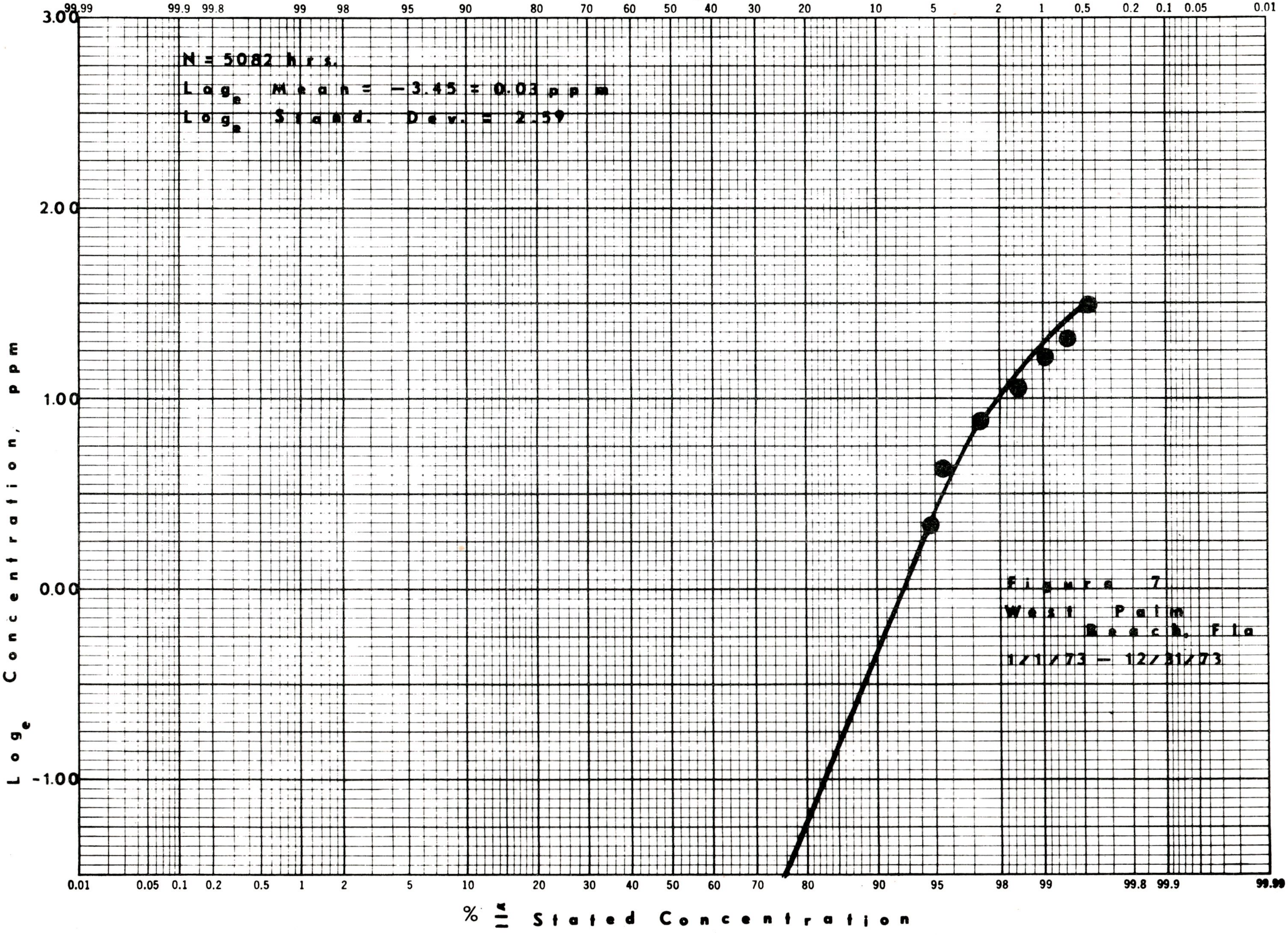
PROBABILITY X 90 DIVISIONS

EUGENE DIETZGEN CO.
MADE IN U. S. A.

CARBON MONOXIDE

1973



N = 5082 hrs.
Log_e Mean = −3.45 ± 0.03 ppm
Log_e Stand. Dev. = 2.59

Figure 7
West Palm
Beach, Fla
1/1/73 — 12/31/73

TABLE 19
AMBIENT AIR, CARBON MONOXIDE, PPM
OCTOBER 10, 1972 - DECEMBER 31, 1973
WEST PALM BEACH, FLORIDA

	QUARTER 4 1972	QUARTER 1 1973	QUARTER 2 1973	QUARTER 3 1973	QUARTER 4 1973	TOTAL SAMPLING PERIOD	%	CUM%
1 Hr. Maximum	6.6	8.9		4.2	7.2	8.9		
8 Hr. Maximum	4.4	6.3		1.8	4.0	6.3		
Geometric Mean						0.03		
CONCENTRATION			FREQUENCY DISTRIBUTION HOURS					
<1.0	937	1590	0	1221	1901	5649	93.12	93.12
1.0-1.4	14	34		19	58	125	2.06	95.19
1.5-1.9	4	4		1	7	16	0.26	95.45
2.0-2.4	7	31		22	57	117	1.93	97.38
2.5-2.9	6	19		6	37	68	1.12	98.50
3.0-3.4	5	11		3	13	32	0.53	99.03
3.5-3.9	4	6			7	17	0.28	99.31
4.0-4.4	1	3		1	6	11	0.18	99.49
4.5-4.9	2	4			6	12	0.20	99.69
5.0-5.4	2	3			1	6	0.10	99.79
5.5-5.9		2			1	3	0.05	99.84
6.0-6.4		1			1	2	0.03	99.87
6.5-6.9	2					2	0.03	99.90
7.0-7.4					1	1	0.02	99.92
7.5-7.9		2				2	0.03	99.95
8.0-8.4		2				2	0.03	99.98
8.5-8.9		1				1	0.02	100.00
TOTAL	984	1713	0	1273	2096	6066		
TOTAL DOWNTIME	699	447	2184	935	112	4377		
TOTAL TIME AT SITE	1683	2160	2184	2208	2208	10443		

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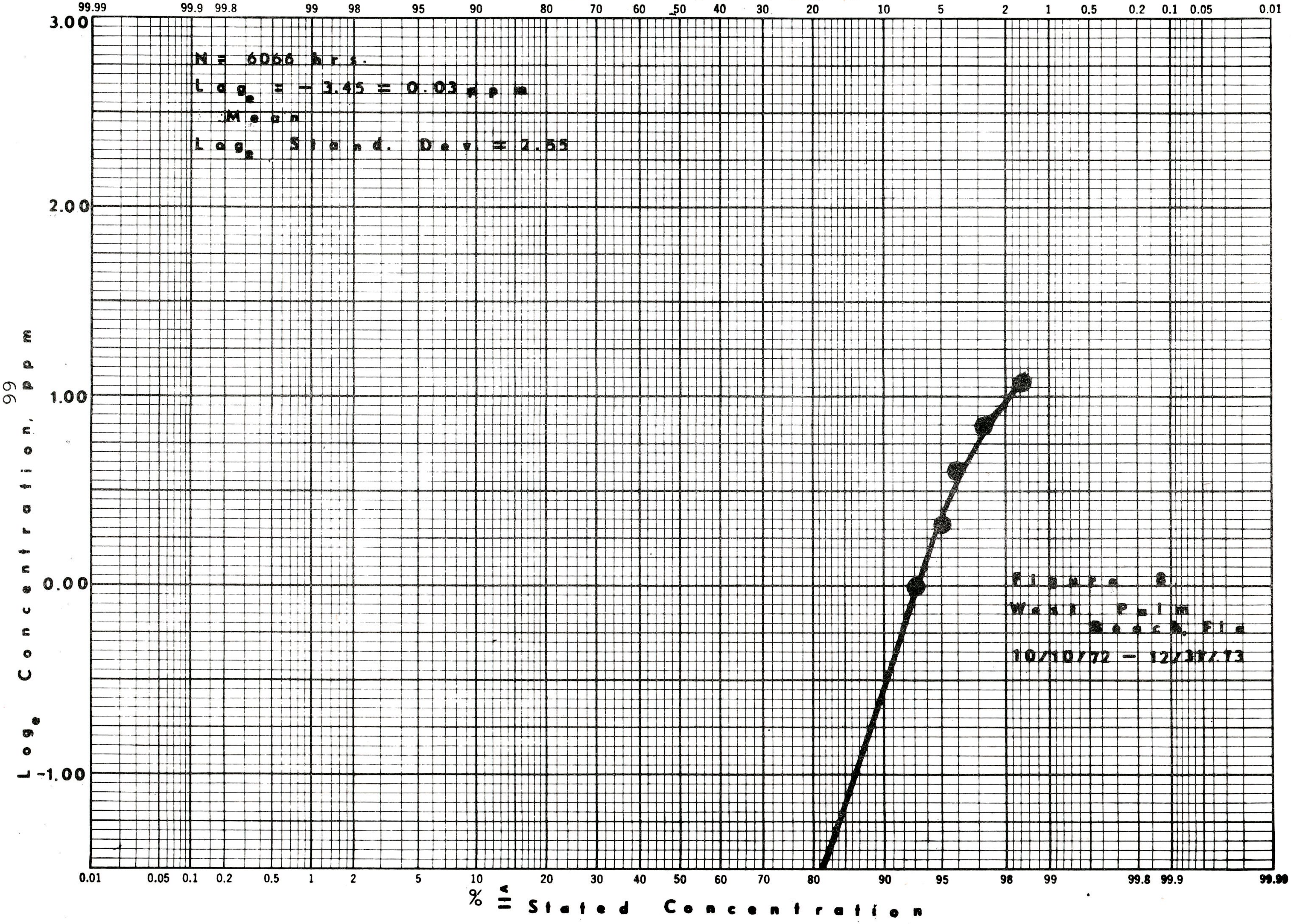
CARBON MONOXIDE

TOTAL STUDY PERIOD



N = 6066 hrs.

$\log_e$ = − 3.45 = 0.03 ppm
Mean

$\log_e$ Stand. Dev. = 2.55

Figure 8
West Palm Beach, Fla
10/10/72 − 12/31/73

99

#8

TABLE 20
AMBIENT AIR, HYDROCARBONS, PPM
1973
WEST PALM BEACH, FLORIDA

	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	ANNUAL	%	CUM %
1 Hr. Maximum	4.4	3.2	3.6	5.5	5.5		
8 Hr. Maximum	3.3	2.1	2.2	3.0	3.3		
CONCENTRATION		**FREQUENCY DISTRIBUTION HOURS**					
<0.1							
0.1-0.5	3		14		17	0.22	0.22
0.6-1.0	489	1246	295	76	2106	27.24	27.46
1.1-1.5	1021	678	993	944	3636	47.04	74.50
1.6-2.0	354	26	446	809	1635	21.15	95.65
2.1-2.5	34		41	134	209	2.70	98.36
2.6-3.0	16	3	9	52	80	1.03	99.39
3.1-3.5	7	1	1	19	28	0.36	99.75
3.6-4.0	4		1	3	8	0.10	99.86
4.1-4.5	5			3	8	0.10	99.96
4.6-5.0				2	2	0.03	99.99
5.1-5.5				1	1	0.01	100.00
5.6-6.0							
6.1-6.5							
TOTAL	1933	1954	1800	2043	7730		
TOTAL DOWNTIME	203	230	408	165	1006		
TOTAL TIME AT SITE	2136	2184	2208	2208	8736		

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PROBABILITY X 90 DIVISIONS

EUGENE DIETZGEN CO.
MADE IN U. S. A.

TOTAL HYDROCARBONS

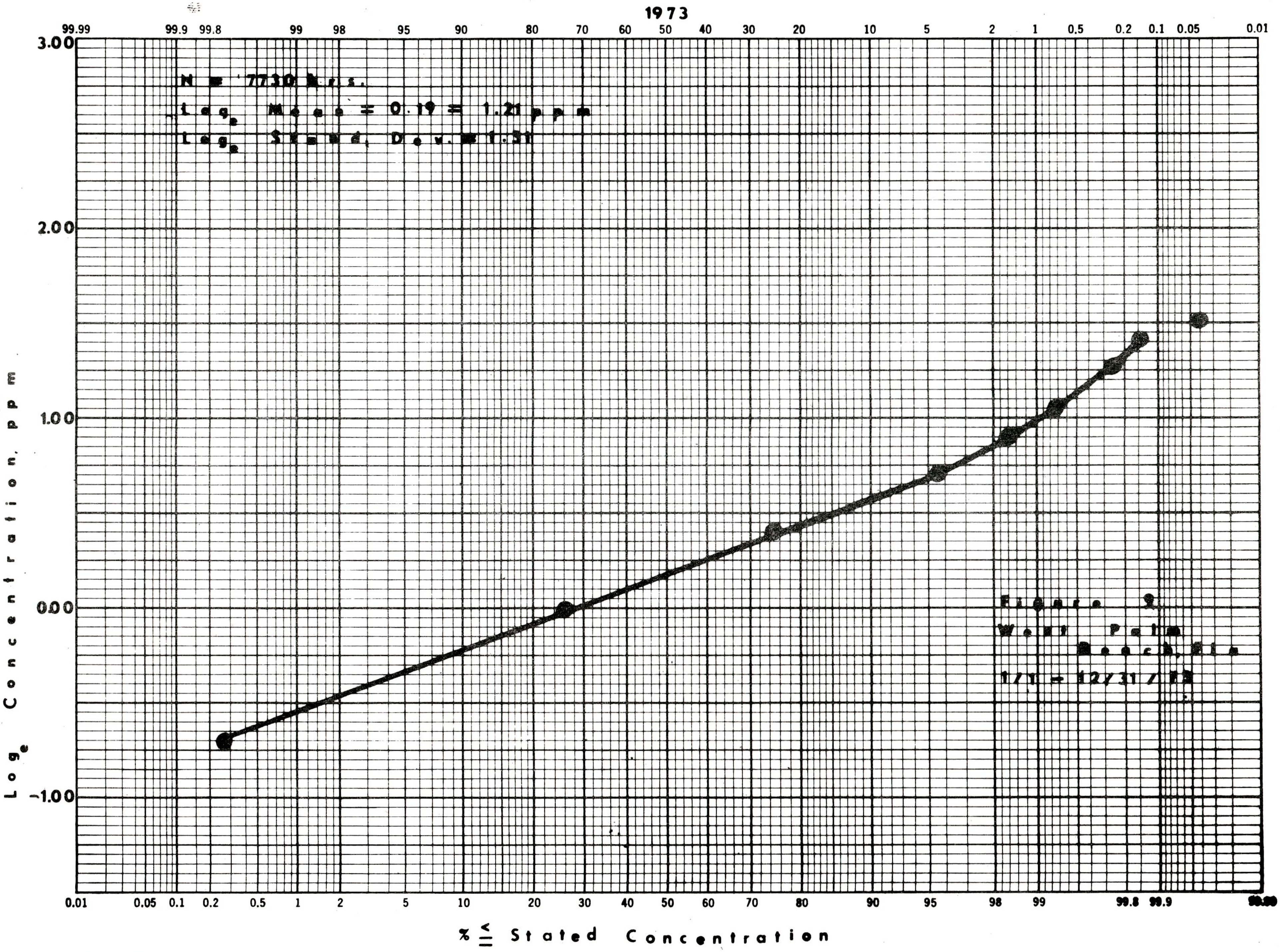

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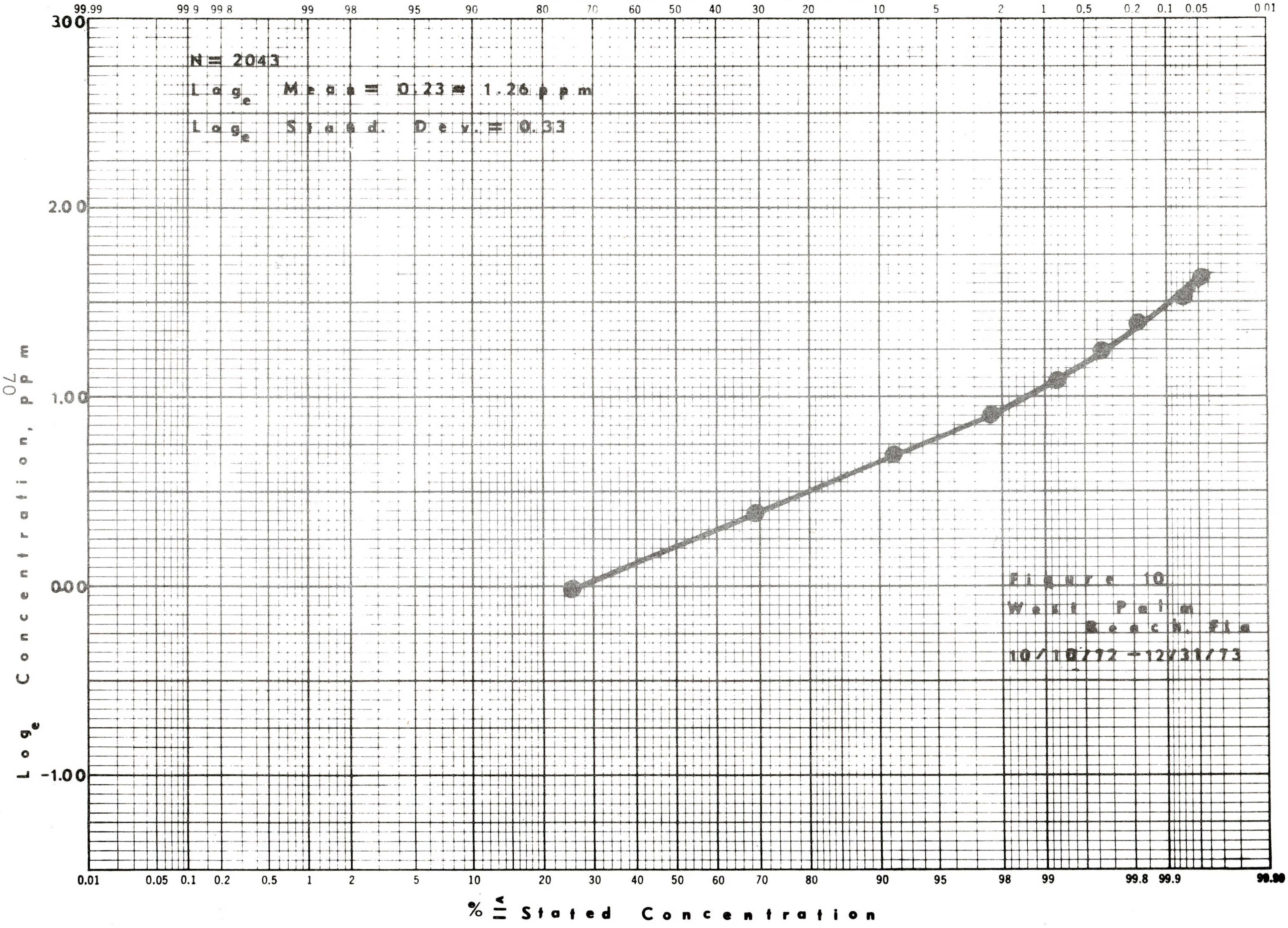
TABLE 21
AMBIENT AIR, HYDROCARBONS, PPM
TOTAL STUDY PERIOD
WEST PALM BEACH, FLORIDA

	QUARTER 4 1972 10/10/72	QUARTER 1 1973	QUARTER 2 1973	QUARTER 3 1973	QUARTER 4 1973	TOTAL STUDY PERIOD	%	CUM %
1 Hr. Maximum	6.5	4.4	3.2	3.6	5.5	6.5		
8 Hr. Maximum	3.6	3.3	2.1	2.2	3.0	3.6		
CONCENTRATION			FREQUENCY DISTRIBUTION HOURS					
<0.1								
0.1-0.5	8	3		14		25	0.29	0.29
0.6-1.0	69	489	1246	295	76	2175	25.30	25.59
1.1-1.5	87	1021	678	993	944	3723	43.30	68.89
1.6-2.0	360	354	26	446	809	1995	23.20	92.09
2.1-2.5	286	34		41	134	495	5.76	97.85
2.6-3.0	37	16	3	9	52	117	1.36	99.21
3.1-3.5	7	7	1	1	19	35	0.41	99.62
3.6-4.0	9	4		1	3	17	0.20	99.81
4.1-4.5	3	5			3	11	0.13	99.94
4.6-5.0					2	2	0.02	99.96
5.1-5.5	1				1	2	0.02	99.99
5.6-6.0								
6.1-6.5	1					1	0.01	100.00
TOTAL	868	1933	1954	1800	2043	8598		
Total Downtime	1115	203	230	408	165			
Total Time at Site	1983	2136	2184	2208	2208			

TOTAL HYDROCARBONS

TOTAL STUDY PERIOD



N = 2043

Log_e Mean = 0.23 = 1.26 ppm

Log_e Stand. Dev. = 0.33

Figure 10
West Palm Beach, Fla
10/10/72 - 12/31/73

TABLE 22
AMBIENT AIR, SO_2, PPM
JANUARY 1 - NOVEMBER 19, 1973
WEST PALM BEACH, FLORIDA

	QUARTER 1	QUARTER 2	QUARTER 3	QUARTER 4	ANNUAL	%	CUM %
1 Hr. Maximum	0.029	0.000	0.000	0.042	0.042		
3 Hr. Maximum	0.022	0.000	0.000	0.034	0.034		
4 Hr. Maximum	0.022	0.000	0.000	0.026	0.026		
8 Hr. Maximum	0.011	0.000	0.000	0.013	0.013		
24 Hr. Maximum	0.004	0.000	0.000	0.004	0.004		
Geometric Mean					$7.5x10^{-5}$		
CONCENTRATION		FREQUENCY DISTRIBUTION MINUTES					
<0.010	99090	100800	114390	59025	373305	99.64	99.64
0.010-0.019	225			570	795	0.21	99.85
0.020-0.029	120			150	270	0.07	99.92
0.030-0.039	30			90	120	0.03	99.96
0.040-0.049				135	135	0.04	99.99
0.050-0.059				15	15	<0.01	<100.00
0.060-0.069				15	15	<0.01	100.00
TOTAL	99465	100800	114390	60000	374655		
DOWNTIME							
Auto Baseline	13950	13560	15975	8505	51990		
Routine Maint.	3030	2460	1875	510	7875		
Mechanical Breakdown	12465	7095	240	2070	21870		
Operator Error	585	6645	0	390	7620		
Dynatronics	105	0	0	0	105		
Power Failure	0	420	0	0	420		
TOTAL	30135	30180	18090	11475	89880		
TOTAL TIME AT SITE	129600	130980	132480	71475	464535		

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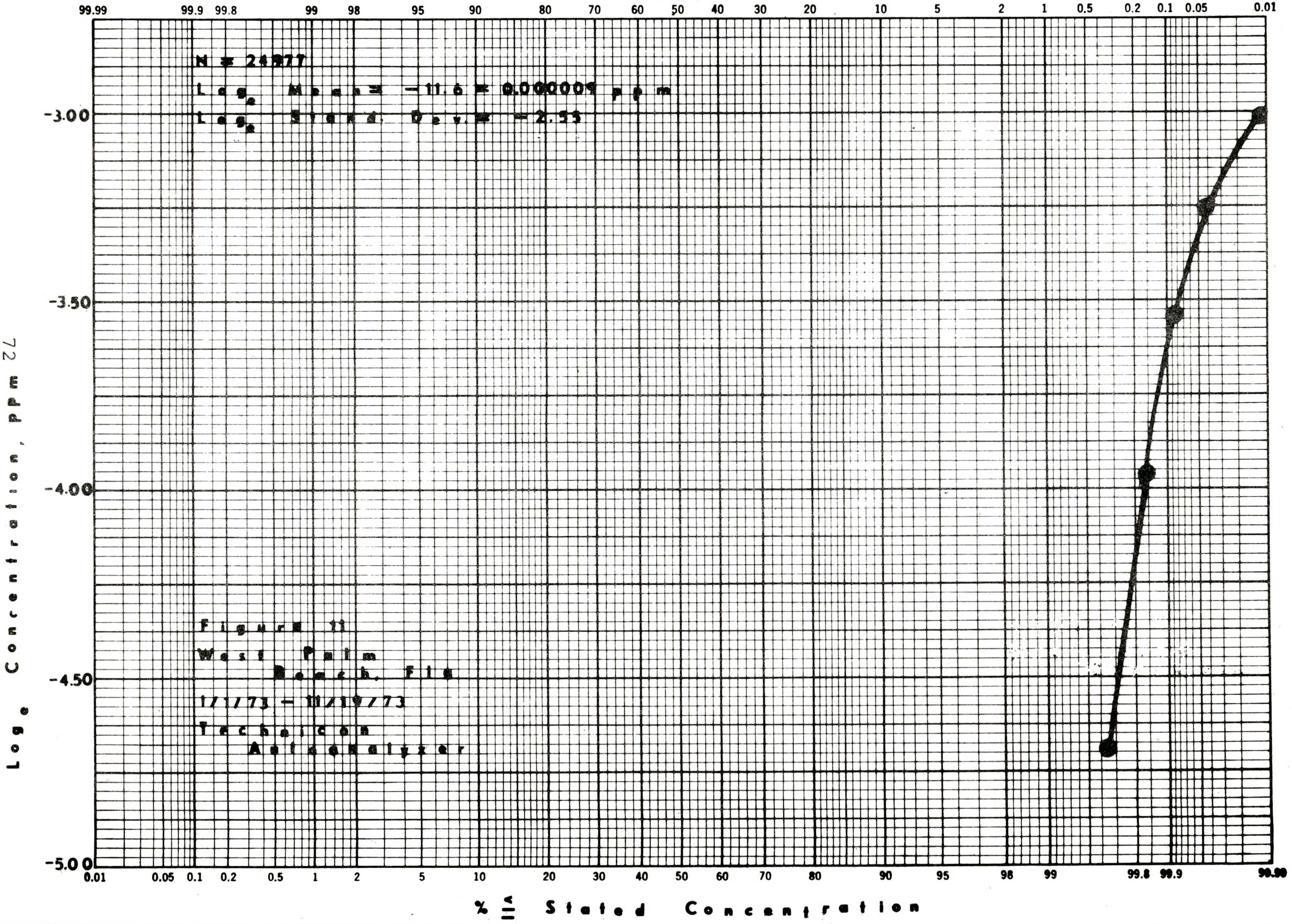
PROBABILITY X 90 DIVISIONS

EUGENE DIETZGEN CO.
MADE IN U. S. A.

SULFUR DIOXIDE

1973



N = 24977

Log$_e$ Mean = −11.6 = 0.000009 ppm

Log$_e$ Stand. Dev. = −2.55

Figure 11

West Palm
Beach, Fla

1/1/73 – 11/19/73

Technicon
Autoanalyzer

TABLE 23
AMBIENT AIR, SO_2, PPM
NOVEMBER 14, 1972 to NOVEMBER 19, 1973
WEST PALM BEACH, FLORIDA

	QUARTER 4 1972	QUARTER 1 1973	QUARTER 2 1973	QUARTER 3 1973	QUARTER 4 1973	TOTAL STUDY PERIOD	%	CUM %
1 Hr. Maximum	0.023	0.029	0.000	0.000	0.042	0.042		
3 Hr. Maximum	0.021	0.022	0.000	0.000	0.034	0.034		
4 Hr. Maximum	0.017	0.022	0.000	0.000	0.026	0.026		
8 Hr. Maximum	0.008	0.011	0.000	0.000	0.013	0.013		
24 Hr. Maximum	0.003	0.004	0.000	0.000	0.004	0.004		
Geometric Mean						8.2x10^{-5}		
CONCENTRATION			**FREQUENCY DISTRIBUTION MINUTES**					
<0.010	47355	99090	100800	114390	59025	420660	99.57	99.57
0.010-0.019	360	225			570	1155	0.27	99.84
0.020-0.029	105	120			150	375	0.09	99.93
0.030-0.039		30			90	120	0.03	99.96
0.040-0.049					135	135	0.03	99.99
0.050-0.059					15	15	<0.01	<100.00
0.060-0.069					15	15	<0.01	100.00
TOTAL	47820	99465	100800	114390	60000	422475		
DOWNTIME								
Auto Baseline	6780	13950	13560	15975	8505	58770		
Routine Maint.	1440	3030	2460	1875	510	9315		
Mechanical Breakdown	3330	12465	7095	240	2070	25200		
Operator Error	6975	585	6445	0	390	14595		
Dynatronics	1755	105	0	0	0	1860		
Power Failure	0	0	420	0	0	420		
TOTAL	20280	30135	30180	18090	11475	110160		
TOTAL TIME AT SITE	68100	129600	130980	132480	71475	532635		

NO. [illegible]PS 90 DIETZGEN GRAPH PAPER
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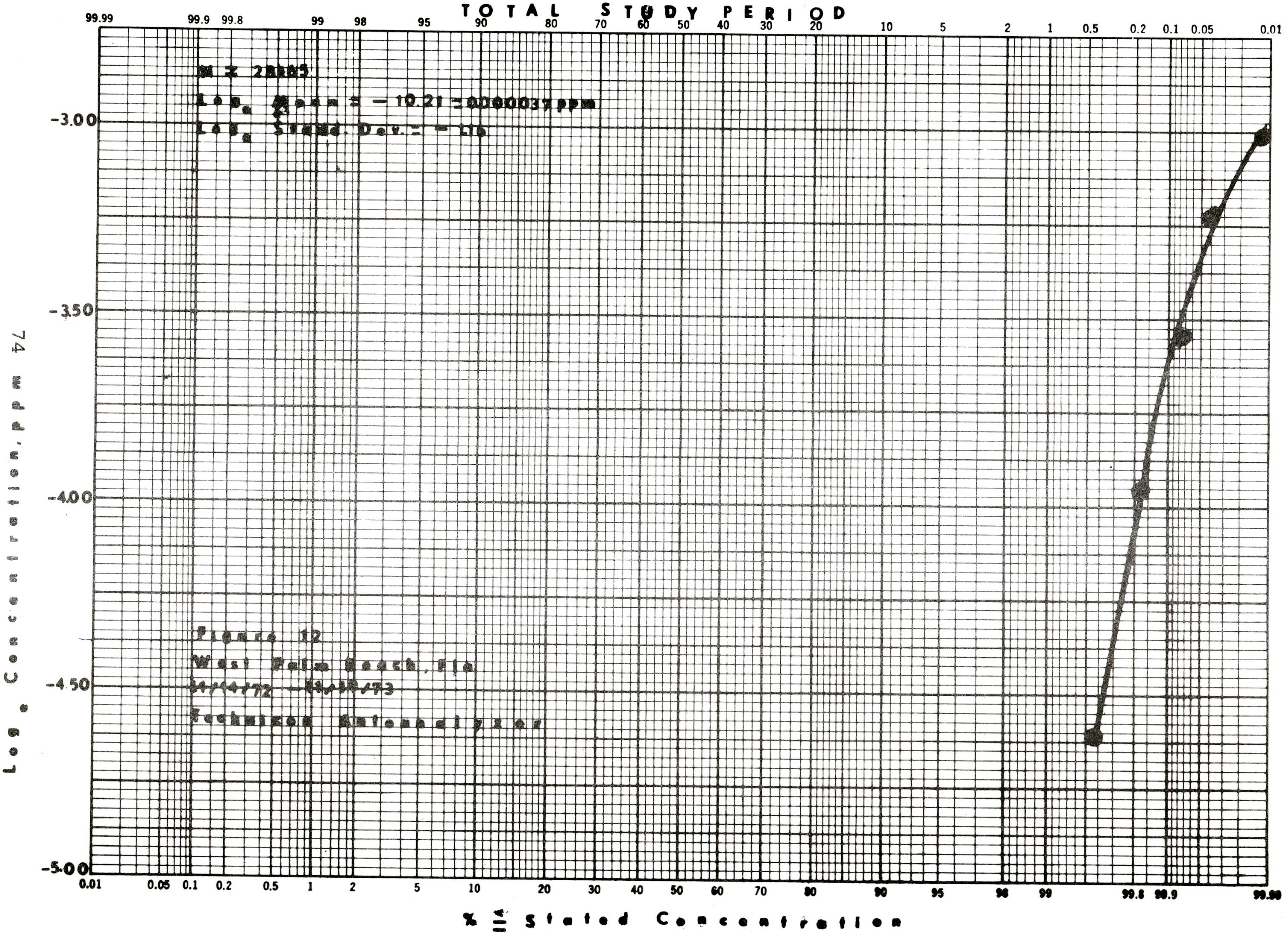
MADE IN U. S. A.

SULFUR DIOXIDE

TOTAL STUDY PERIOD



N = 2[illegible]
Log$_e$ Mean = − 10.21 = .000037 ppm
Log$_e$ Stand. Dev. = − 1.16

Figure 12
West Palm Beach, Fla.
[illegible]/72 — [illegible]/73
Technicon Autoanalyzer

12

TABLE 24
SO_2 STUDY, PPM
WEST PALM BEACH, FLORIDA
BECKMAN 906-A
1973

	NOV.	DEC.	TOTAL	%	CUM %
1 Hr. Maximum	0.000	0.015			
3 Hr. Maximum	0.000	0.008			
4 Hr. Maximum	0.000	0.006			
24 Hr. Maximum	0.000	0.001			
CONCENTRATION	FREQUENCY DISTRIBUTION HOURS				
<0.010	272	672	944	99,79	99.79
0.010-0.019		2	2	0.21	100.00
0.020-0.029					
TOTAL	272	674	946		
DOWNTIME					
Routine Maint.	0	0			
Mechanical Breakdown	0	34			
Operator Error	0	36			
TOTAL	0	70			
TOTAL TIME AT SITE	272	744			

TABLE 25
SO_2 STUDY PPM
BELLE GLADES OFFICE BUILDING
SCIENTIFIC INDUSTRIES ANALYZER-RECORDER
9/21/72-5/1/73

	SEPTEMBER 1972	OCTOBER 1972	NOVEMBER 1972	DECEMBER 1972	JANUARY 1973
1 Hr. Maximum	<0.010	0.025	0.030	<0.010	0.029
3 Hr. Maximum	<0.010	0.021	0.012	<0.010	0.027
4 Hr. Maximum	<0.010	0.019	0.009	<0.010	0.024
24 Hr. Maximum	<0.010	0.007	0.001	<0.010	0.005
CONCENTRATION		FREQUENCY DISTRIBUTION HOURS			
<0.001	153	84	513	405	643
0.001-0.005		18			
0.006-0.010		12			
0.011-0.015		13	1		8
0.016-0.020		2	1		5
0.021-0.025		1	1		1
0.026-0.030			1		3
0.031-0.035					
0.036-0.040					
0.041-0.045					
0.046-0.050					
0.051-0.055					
0.056-0.060					
0.061-0.065					
0.066-0.070					
0.071-0.075					
TOTAL	153	130	517	405	660
TOTAL DOWNTIME	73	614	203	339	84
TOTAL TIME AT SITE	226	744	720	744	744

FEBRUARY 1973	MARCH 1973	APRIL 1973	MAY 1973	TOTAL STUDY PERIOD	%	CUM %
$<$0.010	0.044	0.068	0.031	0.044		
$<$0.010	0.020	0.028	0.025	0.028		
$<$0.010	0.015	0.021	0.011	0.021		
$<$0.010	0.003	0.004	0.006	0.007		
508	370	135	167	2978	96.50	96.50
		1	2	21	0.68	97.18
		2	2	16	0.52	97.70
	1	7	4	34	1.10	98.80
	3	6	2	19	0.62	99.42
	1	1	3	8	0.26	99.68
		2		6	0.19	99.87
		1	1	2	0.06	99.94
	1			1	0.03	99.97
		1		1	0.03	100.00
508	376	156	181	3086		
164	368	564	165	2574		
672	744	720	346	5660		

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SULFUR DIOXIDE- SPECIAL STUDY

BELLE GLADE OFFICE BUILDING

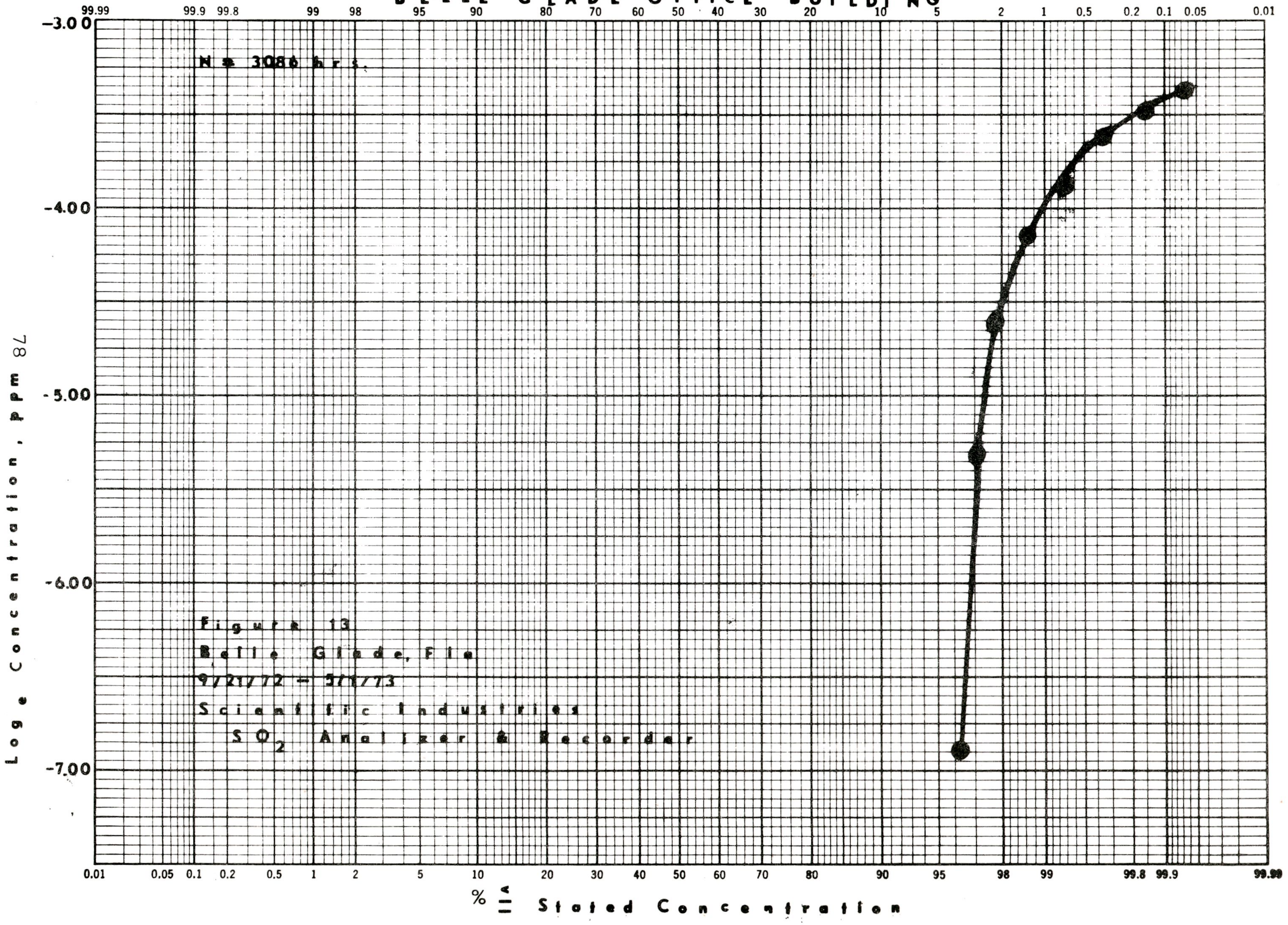

Figure 13
Belle Glade, Fla
9/21/72 - 5/1/73
Scientific Industries
SO_2 Analizer & Recorder

TABLE 26
SO_2 STUDY, PPM
BELLE GLADE HEALTH DEPARTMENT
SCIENTIFIC INDUSTRIES ANALYZER-RECORDER
12/1/72-5/18/73

	DECEMBER 1972	JANUARY 1973	FEBRUARY 1973	MARCH 1973
1 Hr. Maximum	0.013	<0.010	<0.010	0.012
3 Hr. Maximum	<0.010	<0.010	<0.010	<0.010
4 Hr. Maximum	<0.010	<0.010	<0.010	<0.010
24 Hr. Maximum	<0.010	<0.010	<0.010	<0.010

FREQUENCY DISTRIBUTION HOURS

CONCENTRATION	DECEMBER 1972	JANUARY 1973	FEBRUARY 1973	MARCH 1973
<0.001	562	420	326	378
0.001-0.005				3
0.006-0.010				1
0.011-0.015	1			5
0.016-0.020				
0.021-0.025				
0.026-0.030				
0.031-0.035				
0.036-0.040				
0.041-0.045				
0.046-0.050				
0.051-0.055				
0.056-0.060				
0.061-0.065				
0.066-0.075				
0.076-0.080				
>0.080				
TOTAL	563	420	326	387
TOTAL DOWNTIME	170	324	346	357
TOTAL TIME AT SITE	733	744	672	744

APRIL 1973	MAY 1973	TOTAL STUDY PERIOD	%	CUM %
0.043	0.176			
0.019	0.098			
0.015	0.086			
0.002	0.044			
272	230	2188	95.30	95.30
1	2	6	0.26	95.56
1	12	14	0.61	96.17
1	26	33	1.44	97.60
	12	12	0.52	98.12
	10	10	0.44	98.56
	8	8	0.35	98.91
	6	6	0.26	99.17
	8	8	0.35	99.52
	7	7	0.30	99.83
	1	1	0.04	99.87
	1	1	0.04	99.91
	1	1	0.04	99.96
	1	1	0.04	100.00
275	325	2296		
445	95	1737		
720	420	4033		

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SULFUR DIOXIDE – SPECIAL STUDY

BELLE GLADE HEALTH DEPARTMENT

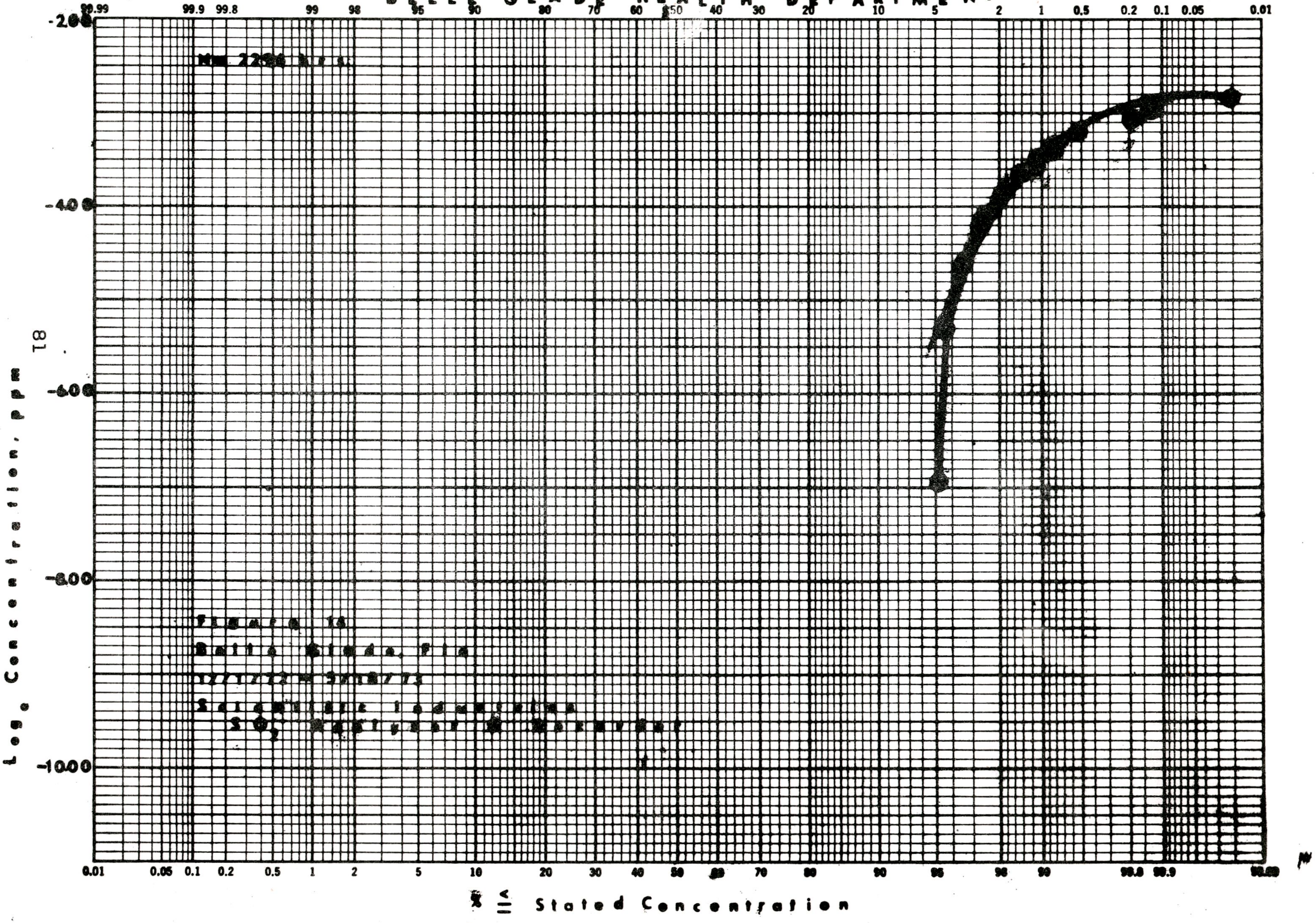

TABLE 27
SO_2 STUDY, PPM
BELLE GLADE HEALTH DEPARTMENT
TECHNICON AUTO-ANALYZER
12/18-12/31/73

1 Hr. Maximum	0.153
3 Hr. Maximum	0.113
4 Hr. Maximum	0.104
24 Hr. Maximum	0.025

FREQUENCY DISTRIBUTION

CONCENTRATION	HOURS	%	CUM %
<0.010	307	96.54	96.54
0.010-0.019	1	0.31	96.86
0.020-0.029	2	0.63	97.48
0.030-0.039	2	0.63	98.11
0.040-0.049	1	0.31	98.43
0.050-0.059	1	0.31	98.74
0.060-0.069			
0.070-0.079	1	0.31	99.06
0.080-0.089			
0.090-0.099	2	0.63	99.69
0.100-0.109			
0.110-0.119			
0.120-0.129			
0.130-0.139			
0.140-0.149			
0.150-0.159	1	0.31	100.00
TOTAL	318		
TOTAL DOWNTIME	0		
TOTAL TIME AT SITE	318		

NO. 340-PS 90 DIETZGEN GRAPH PAPER
PROBABILITY X 90 DIVISIONS

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SULFUR DIOXIDE SPECIAL STUDY

BELLE GLADE HEALTH DEPARTMENT

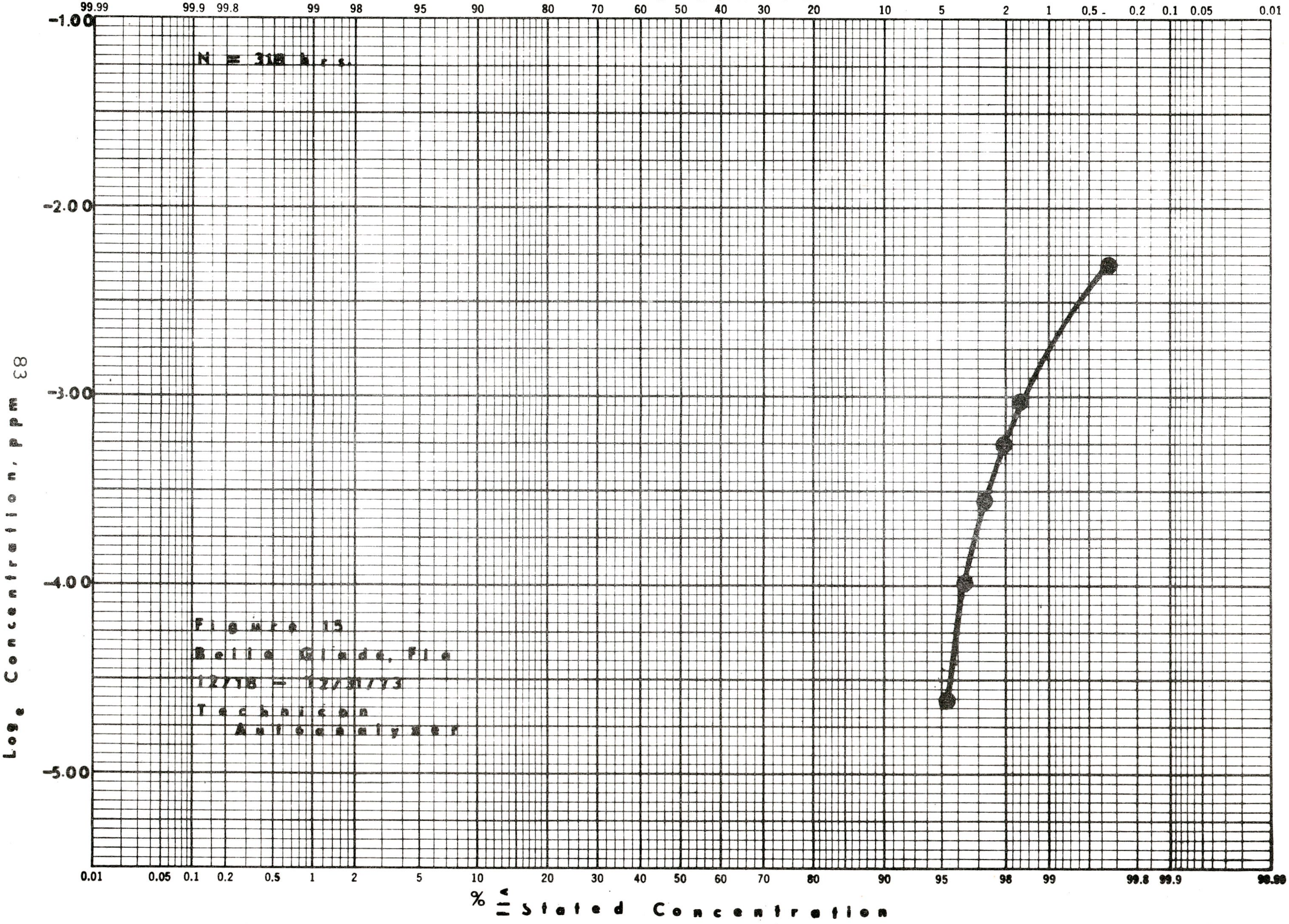


Figure 15
Belle Glade, Fla
12/18 - 12/31/73
Technicon
Autoanalyzer

TABLE 28

MAXIMUM AMBIENT AIR CONCENTRATIONS, PPM.

		SULFUR DIOXIDE			TOTAL OXIDANTS		O_3	
LOCATION	SAMPLING DATA	1 HOUR	4 HOUR	24 HOUR	1 HOUR	8 HOUR	1 HOUR	8 Hour
Tequesta	6/16-7/2/70	0.035	0.025	0.010	0.104	0.093		
	5/11-5/25/71	0.191	0.120	0.028	0.010	0.0004		
	8/13-8/27/71	0.033	0.011	0.003	0.016	0.018		
North Palm Beach	7/2-7/17/70	0.196	0.097	0.028	0.176	0.086		
	4/27-5/11/71	>0.500	>0.293	0.060	0.111	0.055		
	7/30-8/13/71	0.064	0.031	0.005	0.007	0.001		
	5/18-6/30/72	0.053	0.024	0.006	0.116	0.071		
West Palm Beach	7/17-7/31/70	0.094	0.032	0.007	0.114	0.073		
	4/12-4/27/71	0.044	0.029	>0.006	>0.188	>0.130		
	7/16-7/30/71	0.035	0.009	0.002	0.032	0.026		
	11/14-12/31/72	0.023	0.017	0.003	>0.187	>0.040		
	1/1-11/14/73	0.042	0.026	0.004				
	11/14-12/31/73	0.015	0.006	0.001				
	1/1-11/1/73				0.155	0.063		
	9/6-12/31/73						>0.100	>0.071
Lake Worth	7/31-8/14/70	0.031	0.024	0.010	0.129	0.089		
	3/26-4/12/71	0.044	>0.027	0.012	0.110	0.106		
	9/23-10/4/71	0.080	0.025	0.006	0.056	0.048		
	11/10-11/19/71	0.000	0.000	0.000	0.078	0.073		
Boca Raton	8/21-9/4/70	0.076	0.044	0.013	0.048	0.037		
	1/27-2/12/71	0.132	0.087	0.017	0.110	0.095		
	12/29-1/12/72	0.068	0.034	0.006	0.000	0.000		
	7/5-8/1/72	0.015	0.012	0.003	0.050	0.027		
Delray Beach	9/4-9/18/70	0.069	0.021	0.003	0.092	0.066		
	3/12-3/26/71	0.060	0.026	0.005	0.013	0.086		
	10/19-11/1/71	0.006	0.002	0.0003	0.136	0.101		

TABLE 28 (CONT)
MAXIMUM AMBIENT AIR CONCENTRATIONS, PPM

LOCATION	SAMPLING DATA	SULFUR DIOXIDE			TOTAL OXIDANTS		O_3	
		1 HOUR	4 HOUR	24 HOUR	1 HOUR	8 HOUR	1 HOUR	8 HOUR
Royal Palm Beach	9/28-10/12/70	0.106	0.036	0.006	0.076	0.068		
	2/26-3/12/71	0.026	>0.007	>0.003	0.110	0.093		
	11/19-12/10/71	0.015	0.005	0.001	0.038	0.016		
Belle Glade	10/12-10/26/70	0.000	0.000	0.000	0.078	0.061		
	2/12-2/26/71	>0.288	>0.122	>0.030	0.103	0.076		
	2/10-12/29/71	>0.267	>0.187	>0.039	0.012	0.006		
	9/21/72-5/1/73	0.044	0.021	0.007				
	12/1/72-5/18/73	0.176	0.086	0.044				
	12/18-12/31/73	0.153	0.104	0.025				

NOTE: Table 28 continued next page.

TABLE 28 (CONT)

MAXIMUM AMBIENT AIR CONCENTRATION, PPM.

		NO_2			CO		HC	
LOCATION	SAMPLING DATES	1 HOUR	8 HOUR	AR./MEAN	1 HOUR	8 HOUR	1 HOUR	8 HOU
Tequesta	6/16-7/2/70	0.044	0.032	0.010				
	5/11-5/25/71	0.054	0.040	0.013	2.2	0.3		
	8/13-8/27/71	0.073	0.060	0.013	0.0	0.0		
North Palm Beach	7/2-7/17/70	0.084	0.060	0.010				
	4/27-5/11/71	0.096	0.066	0.017				
	7/30-8/13/71	0.083	0.069	0.018	3.2	0.9		
	5/18-6/30/72	0.088	0.059	0.010	0.0	0.0	3.2	2.2
West Palm Beach	7/17-7/31/70	0.097	0.068	0.016				
	4/12-4/27/71	0.147	0.079	0.026				
	7/16-7/30/71	0.067	0.056	0.018	3.6	3.1		
	11/14-12/31/72	0.092	0.079	0.020	7.0	3.7	6.5	3.2
	1/1-11/15/73	0.060	0.047	0.007				
	1/1-12/31/73				8.9	6.3	5.5	3.3
Lake Worth	7/31-8/14/70	0.097	0.068	0.016				
	3/26-4/12/71	0.118	0.107	0.018	2.1	0.3		
	9/23-10/4/71	0.059	0.041	0.018	0.0	0.0		
	11/10-11/19/71	0.124	0.101	0.020	0.0	0.0		
Boca Raton	8/21-9/4/70	0.064	0.048	0.015				
	1/27-2/12/71	>0.200	>0.187	0.047	9.6	4.2		
	12/29-1/12/71	0.079	0.069	0.022	2.6	0.4		
	7/5-8/1/72	0.065	0.055	0.011				
Delray Beach	9/4-9/18/70	0.055	0.051	0.013				
	3/12-3/26/71	0.146	0.113	0.018	2.1	0.4		
	10/19-11/1/71	0.117	0.093	0.029				
Royal Palm Beach	9/28-10/12/71	0.031	0.018	0.007				
	2/26-3/12/71	0.106	0.081	0.016	0.8	0.1		
	11/9-12/10/71	0.074	0.055	0.019	2.2	2.0		
Belle Glade	10/12-10/26/70	0.118	0.067	0.017				
	2/12-2/26/71	0.152	0.091	0.022	5.2	3.0		
	12/10-12/29/71	0.076	0.048	0.024	0.0	0.0		

TABLE 29
AMBIENT AIR QUALITY STANDARDS
SOUTH EAST FLORIDA AIR QUALITY REGION
1973

	SULFUR DIOXIDE			CARBON MONOXIDE		PHOTOCHEMICAL OXIDANTS	NITROGEN DIOXIDE
LOCATION	MAXIMUM 24 HOUR CONCN.	MAXIMUM 4 HOUR CONCN.	MAXIMUM 1 HOUR CONCN.	MAXIMUM 8 HOUR CONCN.	MAXIMUM 1 HOUR CONCN.	MAXIMUM 1 HOUR CONCN.	ANNUAL ARITHMETIC MEAN
Standard	0.010ppm	0.020ppm	0.100ppm	8ppm	12ppm	0.08ppm	0.05ppm
West Palm Beach	0.004	0.026	0.042	6	9	0.155 X >0.100 XX	0.01
Belle Glade	0.044	0.086	0.176				

X Total Oxidants
XX Ozone

X

EMISSION INVENTORY

INTRODUCTION

The emission inventory presented in this report represents the calculated emissions within Palm Beach County for the calendar year 1973. Individual pollutants, emission factors and methodology are as described in previous reports. The individual pollutants reported include aldehydes, carbon monoxide, hydrocarbons, oxides of nitrogen (calculated as nitrogen dioxide) oxides of sulfur and particulates. Organic acids, as a category was removed from this report as no longer significant in accord with new emission facotrs. This omission accounts, in part, for the decrease in total pollutants for this report period. Emission factors applied are to be found in Compilation of Air Pollution Emission Factors, Second Edition, April, 1973 published by the U. S. Environmental Protection Agency, Office of Air and Water Programs, Office of Air Quality Planning and Standards, Research Triangle Park, North Carolina. Primary point emission sources and monitoring stations are located and identified in Exhibit I.

DISCUSSION AND RESULTS

TRANSPORTATION

Motor Vehicles: An overall reduction in total pollutants from this source reflects an increase in the percentage of the automobile population equipped with pollution control devices and changes in emission factors. These changes are counterbalanced by increased gasoline consumption and total automobile population. Accurate estimates for vehicle miles within the county were unavailable, so all calculations were based on gasoline sales converted to vehicle miles, and model year population estimates as described in Compilation of Air Pollutant Emission Factors, Preliminary Document and Second Edition.

Aircraft: Decreases in this category reflect changes in emission factors rather than decreased air traffic within the county. Operational records for the Belle Glade Correctional Institute's Airport were available for the first time for this report.

Locomotive: Increases within this category reflect changes in the emission factors and increased locomotive traffic during the report period.

INDUSTRIAL

Steam Electric: Decreases in this category reflect changes in the emission factors for power plants. Fuel oil consumption was increased during the report period.

Aircraft: Calculated emissions from this source have decreased slightly due to changes in emission factors and do not reflect actual decreases in the activity of the industry.

Concrete Batching: Increases in emissions from this source reflect increased production and the inclusion of additional sources.

Asphalt Batching: Decreases within this category reflect the replacement of one old plant by a new batching plant with more efficient controls and conversion to cleaner fuel oil. New emission factors have been applied to all plants operating within the county.

Sugar: Increased emissions from this source reflect increased acreage of sugar fields, and an increase in the sugar production quota. New factors for open burning and for the sugar industry do not include organic acids, so the elimination of this category reduces the total emissions attributed to this industry.

Processing: Emissions in this category have remained relatively stable.

Solvent Emissions: Increases in this category reflect increase in population within the county.

REFUSE DISPOSAL

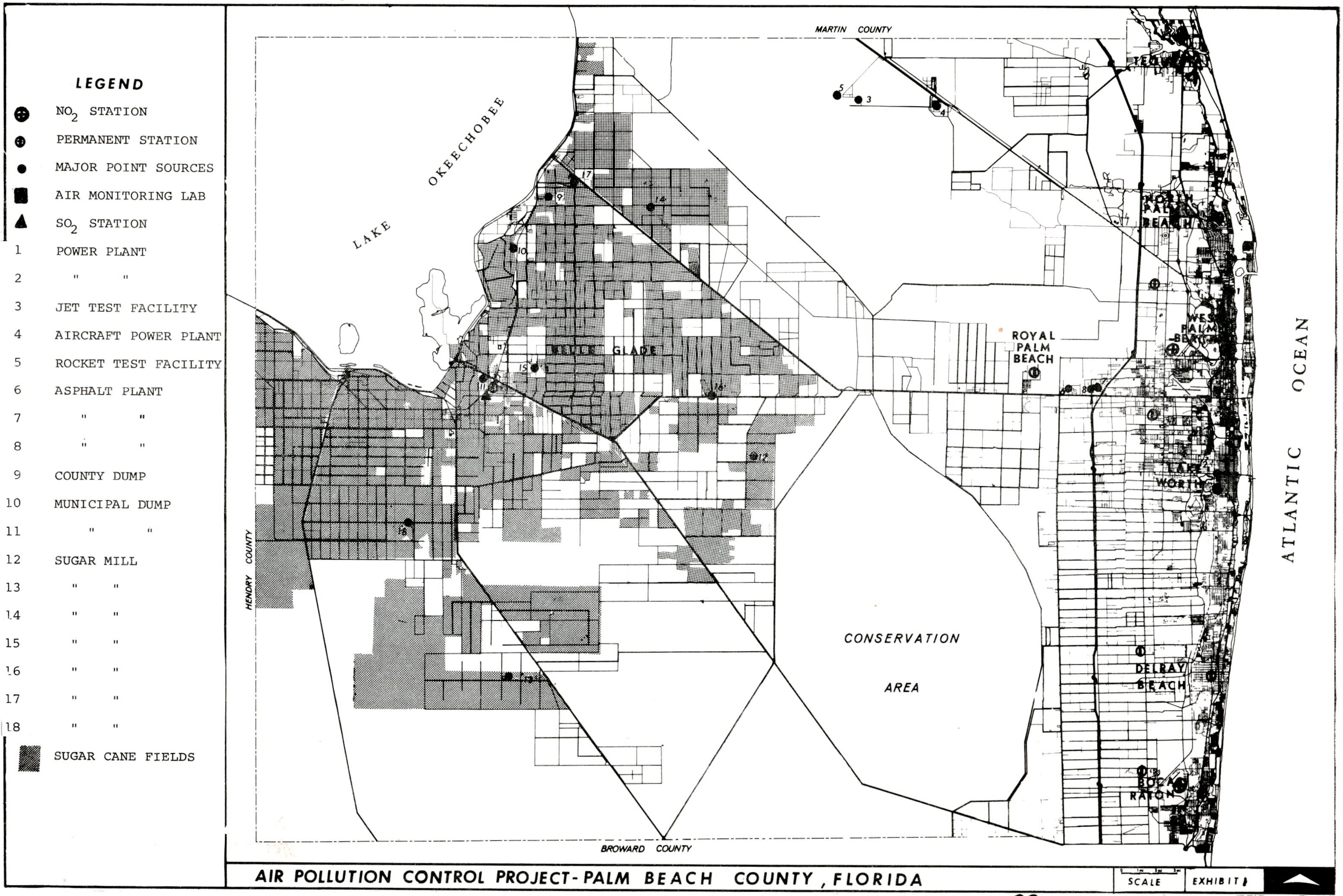
Incinerators: Increased emissions from this source may be attributed to changes in emission factors rather than to an increase in incineration within the county. The number of incinerators in operation has been reduced during the report period.

Open Burning: Increased utilization of compacting, transfer stations, centralization of ultimate disposal sites and improved operational practices within county dumps have all contributed to decreased emissions within this category.

RESIDENTAL AND COMMERCIAL HEATING AND COOLING: Decreased emissions in this category reflect a decrease in the number of degree-heating and cooling days.

TABLE 30
SUMMARY OF AIR POLLUTION EMISSIONS IN PALM BEACH COUNTY
1973 (T/YR.)

SOURCE	ALD	CO	HC	NO_2	SO_2	SO_3	PART	TOTAL	%
TRANSPORTATION	16	76234	26478	13270	487	<1	1410	117904	45.55
Motor Vehicles	9	74197	26208	12630	397		1367	114815	44.35
Aircraft		1870	143	142	14	<1	9	2178	0.84
Locomotive	7	176	127	498	76	<1	34	918	0.35
INDUSTRIAL	335	67134	13197	12130	18838	241	26552	138427	53.48
Steam Electric	87	261	174	9117	12334	157	695	22825	8.82
Other Industrial	248	66873	13023	3013	6504	84	25857	115602	44.66
Aircraft	31	263	76	480	907	12	268	2037	0.79
Concrete Batch							535	535	0.21
Asphalt Batch	2	4	3	75	226	3	144	457	0.18
Sugar	211	66598	12157	2291	5224	67	24880	111428	43.05
Processing	4	8	6	167	147	2	30	364	0.14
Other Solvent			781					781	0.30
REFUSE DISPOSAL	<1	250	89	34	3	<1	58	434	0.17
Incineration		18	9	4	3		15	49	0.02
Open Burning	<1	232	80	30	<1	<1	43	385	0.15
RESIDENTIAL AND COMMERCIAL HEATING AND COOLING	23	23	23	935	890	9	191	2094	0.81
TOTAL	374	143650	39787	26369	20218	250	28211	258859	



AIR POLLUTION CONTROL PROJECT - PALM BEACH COUNTY, FLORIDA